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JC822 U.S. PTO
09/608282**NEW UTILITY PATENT APPLICATION TRANSMITTAL**

(Only for new nonprovisional applications under 37 C.F.R. 1.53(b))

Docket No.
19529-037Total pages in this
submission**TO THE ASSISTANT COMMISSIONER FOR PATENTS**Box Patent Application
Washington, D.C. 20231

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

SYSTEM AND METHOD FOR DELIVERING INFORMATION TO A TRANSMITTING AND RECEIVING DEVICE (As Amended)

And invented by:

RICHARD J. HELFERICH

IF A CONTINUATION APPLICATION, check appropriate box and supply requisite information:

Continuation Divisional

Continuation-in-part (CIP) of prior application No.: 08/933,344

Enclosed are:

Application Elements

1. Filing fee as calculated and transmitted as described below
2. Specification having 61 pages(s) and including the following:
 - a. Descriptive title of the invention
 - b. Cross references to related applications (*if applicable*)
 - c. Statement regarding Federally-sponsored research/development (*if applicable*)
 - d. Reference to microfiche appendix (*if applicable*)
 - e. Background of the invention
 - f. Brief summary of the invention
 - g. Brief description of the drawings (*if drawings filed*)
 - h. Detailed description
 - i. Claims as classified below
 - j. Abstract of the disclosure

Application Elements (continued)

3. Drawing(s) (when necessary as prescribed by 35 U.S.C. 113)

Formal

Informal

Number of sheets: 12

4. Oath or Declaration

a. Newly executed (original or copy) Unexecuted

b. Copy from a prior application (37 C.F.R. 1.63(d) (for continuation/divisional applications only))

c. With Power of Attorney Without Power of Attorney

5. Incorporation by reference (usable if Box 4b is checked)

The entire disclosure of the prior application, from which a copy of the oath or declaration is Supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

6. Computer program in microfiche

7. Genetic sequence submission (if applicable, all must be included)

a. Paper copy

b. Computer readable copy

c. Statement verifying identical paper and computer readable copies

Accompanying Application

8. Assignment papers (cover sheet & document(s))

9. 37 C.F.R. 3.73(b) statement (when there is an assignee)

10. English translation document (if applicable)

11. Information Disclosure Statement/PTO-1449 Copies of IDS citations

12. Preliminary Amendment

13. Acknowledgment postcard

14. Certified copy of priority document(s) (if foreign priority is claimed)

15. Certificate of Mailing

First Class

Express Mail (Label No.: EL542221770US)

16. Small Entity statement(s) - # submitted 1 (copy) (if Small Entity status claimed)

1542221770US

Accompanying Application (continued)

17. Additional enclosures (please identify below):

(1) Notification That the Power of Attorney and Correspondence Has Changed During the Prosecution of the Patent Application Under 37 C.F.R. 1.63(d)(4)

Fee Calculation and Transmittal

The filing fee for this utility patent application is calculated and transmitted as follows:

Large Entity

Small Entity

CLAIMS AS FILED					
For	# Filed	# Allowed	# Extra	Rate	Fee
Total Claims	70	- 20 =	50	x \$9.00	\$450.00
Independent Claims	24	- 3 =	21	x \$40.00	\$840.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					
Other Fees (specify purpose):					
BASIC FEE					\$355.00
TOTAL FILING FEE					\$1,645.00

A check in the amount of \$1,645.00 to cover the total filing fee is enclosed.

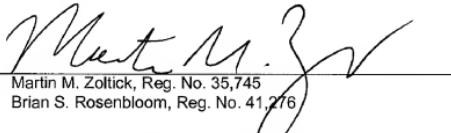
The Commissioner is hereby authorized to charge and Deposit Account No. 50-1553 as described below. A duplicate copy of this sheet is enclosed.

Charge the amount of _____ as filing fee.

Credit any overpayment.

Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.

Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.31(b).



Dated: October 13, 2000

Martin M. Zoltick, Reg. No. 35,745

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sRestondocs:12671.1(9RZ01!.DOC)

Attorney Docket No. 19504-012

STATEMENT CLAIMING SMALL ENTITY STATUS
UNDER 37 C.F.R. §1.9(f) AND 1.27(b) - INDEPENDENT INVENTOR

Applicant: Richard J. Helferich
Serial No.: 08/933,344
Filed: September 19, 1997
Title: SYSTEMS AND METHODS FOR DELIVERING INFORMATION TO A
TRANSMITTING AND RECEIVING DEVICE *(As Amended)*

As a below named inventor, I hereby state that I qualify as an independent inventor as defined in 37 C.F.R. §1.9(c) for purposes of paying reduced fees to the Patent and Trademark Office described in:

the specification filed herewith with title as listed above.
 the application identified above.
 the patent identified above.

I have not assigned, granted, conveyed, or licensed, and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 C.F.R. §1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 C.F.R. §1.9(d) or a nonprofit organization under 37 C.F.R. §1.9(e).

Each person, concern, or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below.

No such person, concern, or organization exists.
 Each such person, concern, or organization is listed below.

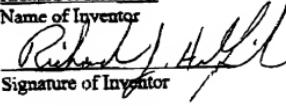
Separate statements are required from each named person, concern, or organization having rights to the invention stating their status as small entities (37 C.F.R. §1.27).

* Attorney Docket No. 1956 12
Serial No.: 08/933,344

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in a loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate (37 C.F.R. §1.28(b)).

Richard J. Helferich

Name of Inventor


Signature of Inventor

11-15-99

Date

RESTONDOCS 5396

Restondocs:5402.1(4004011.DOC)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Docket No.: 19529-037
Richard J. Helferich

Serial No.: *To be assigned* Examiner: *To be assigned*
Filing Date: *Herewith* Group Art Unit: *To be assigned*

For: **System and Method for Delivering
Information to a Transmitting and
Receiving Device (As Amended)**

The Assistant Commissioner for Patents
Washington, D.C. 20231

Preliminary Amendment

Dear Sir:

Before examination of the above-referenced patent application, Applicant submits the following amendments.

AMENDMENTS

In the Title

Please change the title to: "Systems and Methods for Delivering Information to a Transmitting and Receiving Device".

In the Specification:

Please amend the specification as follows:

Page 1, after the title and before "RELATED APPLICATIONS" insert -- This application is a divisional of U.S. Patent Application S.N. 08/933,344, filed September 19, 1997, the entire contents of which are incorporated herein by reference. --

100-112-2839560

Page 1, line 5, after "Information," insert --application Serial No. 08/934,143;--
line 5, change "Information" to --Messages--;
line 7, after "Times," insert --application Serial No. 08/934,337;--;
line 7, after "Information," insert --application Serial No. 08/934,132;--; and
line 14, change "paging receiving" to --paging receiver--.

Page 2, line 21, after "display" insert --and/or play--.

Page 5, line 1, change "transceivers" to --transceiver--.

Page 6, line 7, change "messages" to --message--.

Page 7, line 2, change "paging receivers" to --pager transceivers--; and
line 13, change "message" to --messages--.

Page 19, line 4, after "call" insert --signals--;

line 8, after "83," insert --if an acknowledgment signal was received,--;
line 11, change "82" to --83--; and
line 20, change "is" to --are--.

Page 22, line 12, change "The messages" to --One or more messages--;
line 13, after "addresses" insert --or recipients--;
line 19, delete "another";
line 19, after the first occurrence of "or" insert --a--; and
line 19, change the second occurrence of "or" to --of--.

Page 23, line 6, change "Fig. 7" to --Fig. 8--; and
line 13, delete the first occurrence of "135".

Page 25, line 4, change "each" to --the--.

Page 26, line 8, after "If" insert --at step 138--;
line 9, after "If" insert --at step 138 the user responds that--;

line 11, after "and" insert --a delay occurs at step 141 with delay circuit 28, as described above. After the delay, a call is established with system 30 at step 139 and flow continues as previously described.--;

line 11, change "the" to --The--; and

line 21, after "At" insert --step--.

Page 27, line 15, after "time" insert --. A delay occurs at step 141 with delay circuit 28 as described above. After the delay, a call is established with system 30 at step 139 and flow continues as previously described. Transmission to system 30 may also take place at a later time--; and

Page 28, line 1, after "information" insert --and/or--;

line 16, after the second occurrence of "call" insert --at step 141--;

line 16, after "session," insert --or some later time--; and

line 17, after "session" insert --or after the delay,--.

Page 29, line 18, delete "at step"; and

line 19 delete "132".

Page 30, line 6, change "pre stored" to --pre-stored--;

line 17, after "storage" insert --and retrieval--; and

line 17, after "unit 32" insert a period.

Page 31, line 11, after "If" insert --the user responds--;

line 12, after "If" insert --the user responds--;

line 12, after "no" insert --at step 138--; and

line 13, after "30" insert --after the delay of step 141,--.

Page 35, line 9, change "transmitted" to --transmitting--.

Page 37, line 10, change the first and second occurrence of "201" to --35--;

line 13, change "is" to --are--; and

line 13, change "station" to --stations--.

Page 40, line 9, delete “function of”; and
line 8, after “retrieve” insert --message--.
Page 42, line 10, change “message” to --message

In the Abstract:

Page 61, line 2, change “selecting” to --selective--.

In the Claims:

Please amend the claims as follows:

Please cancel claims 1-81

Please add new claims 82-151

--82. A system, comprising:

a storage and retrieval unit for storing a message intended for a transmitting and receiving device;

signal generating means for generating a signal comprising a message identifier that identifies the message, wherein the signal generating means does not include the message in the signal regardless of the size of the message;

means for sending the signal to the transmitting and receiving device, wherein, at the time the signal is sent to the transmitting and receiving device, the message is not stored in the transmitting and receiving device;

means for receiving a request signal generated by the transmitting and receiving device, wherein the request signal specifies an action to be performed on the message stored in the storage and retrieval unit; and

means for performing the action in response to the receiving means receiving the request signal.

83. The system of claim 82, wherein the action specified by the request signal is to forward the message to a recipient specified in the request signal.

84. The system of claim 82, wherein the action specified by the request signal is to send a reply message to the originator of the message.

85. The system of claim 82, wherein the action specified by the request signal is to delete the message from the storage and retrieval unit.

86. The system of claim 82, wherein the action specified by the request signal is to store the message in the storage and retrieval unit.

87. The system of claim 82, wherein the action specified by the request signal is to send the message to the transmitting and receiving device.

88. The system of claim 82, wherein the means for sending the signal to the transmitting and receiving device sends the signal to a base station, which transmits the signal to the transmitting and receiving device.

89. A system, comprising:

means for storing a first message intended for a transmitting and receiving device;
means for sending a second message through a wide area communications network to a base station, the second message not including the first message, but including a message identifier identifying the first message, whereupon receiving the second message, the base station transmits to the transmitting and receiving device a signal comprising the message identifier;
means for receiving a request signal generated by the transmitting and receiving device, the request signal comprising an action identifier identifying an action to be performed on the first message; and
means for performing the action in response to the receiving means receiving the request signal.

90. The system of claim 89, wherein the action corresponding to the action identifier is to forward the first message to a recipient.

91. The system of claim 89, wherein the action corresponding to the action identifier is to reply to the first message.

92. The system of claim 89, wherein the action corresponding to the action identifier is to delete the first message from the storing means.

93. The system of claim 89, wherein the action corresponding to the action identifier is to send the first message to the transmitting and receiving device.

94. A system, comprising:
a storage and retrieval unit for storing a first message intended for a transmitting and receiving device;

signal generating means for generating a signal comprising a message identifier that identifies the first message, wherein the first message is not included in the signal; means for sending the signal to the transmitting and receiving device; means for receiving a request signal generated by the transmitting and receiving device, the request signal comprising a reply request and a second message; and means for sending the second message to an originator of the first message regardless of whether the first message was ever sent to the transmitting and receiving device.

95. The system of claim 94, wherein the means for sending the signal to the transmitting and receiving device sends the signal to a base station, which transmits the signal to the transmitting and receiving device.

96. A transmitting and receiving device for transmitting data to and receiving data from a communication system, comprising:

a receiver that receives a selective call signal having a message identifier identifying a first message that is stored in a system, wherein the first message is not included in the selective call signal, and, at the time the receiver receives the selective call signal, the first message is not stored in the transmitting and receiving device;

a user interface for receiving from a user of the transmitting and receiving device one or more commands, wherein after the receiver receives the selective call signal, a reply command for sending a reply to the first message is operable;

a processor for generating a reply signal in response to the user interface receiving the reply command, the reply signal comprising a message indicator corresponding to the first message and a second message; and

a transmitter for sending the reply signal to the system, whereupon receiving the reply signal, the system transmits the second message to the originator of the first message.

97. The transmitting and receiving device of claim 96, wherein the transmitter sends the reply signal to a base station, which then forwards the reply signal to the system.

98. A system, comprising:

a storage and retrieval unit for storing a message intended for a transmitting and receiving device;

signal generating means for generating a signal comprising a message identifier that identifies the message, wherein the message is not included in the signal;

means for sending the signal to the transmitting and receiving device;

means for receiving a request signal generated by the transmitting and receiving device, the request signal indicating two or more actions to be performed on the message; and

means for performing the two or more actions.

99. The system of claim 98, wherein one of the at least two actions is to send the message to the transmitting and receiving device and another of the at least two actions is to store the message within the storage and retrieval unit.

100. The system of claim 98, wherein one of the at least two actions is to send the message to the transmitting and receiving device and another of the at least two actions is to forward the message to a recipient.

101. The system of claim 98, wherein the means for sending the signal to the transmitting and receiving device sends the signal to a base station, which transmits the signal to the transmitting and receiving device.

102. A system, comprising:

a storage and retrieval unit that stores a message intended for a transmitting and receiving device; and

a controller for sending to the transmitting and receiving device a first signal comprising a message identifier identifying the message, wherein the first signal does not include the message, and for sending to the transmitting and receiving device a second signal comprising at least part of the message identifier and a status indicator for indicating the status of the message.

103. The system of claim 102, wherein the means for sending the first signal to the transmitting and receiving device sends the first signal to a base station, which transmits the first signal to the transmitting and receiving device.

194. A communication system, comprising:

a base station.

a transmitting and receiving device in communication with the base station; and

a system in communication with the base station, the system comprising:

a storage and retrieval unit for storing a message intended for the transmitting and receiving device;

signal generating means for generating a signal comprising a message identifier that identifies the message, wherein, regardless of the size of the message, the signal generating means does not include the message in the signal;

means for transmitting the signal to the base station, whereupon receiving the signal, the base station transmits the signal to the transmitting and receiving device, wherein, at the time the signal is transmitted to the transmitting and receiving device, the message is not stored in the transmitting and receiving device;

means for receiving a request signal generated by the transmitting and receiving device and transmitted therefrom to the base station, wherein the request signal specifies an action to be performed on the message stored in the storage and retrieval unit; and

means for performing the action on the message in response to the receiving means receiving the request signal.

105. The communication system of claim 104, wherein the action specified by the request signal is to forward the message to a recipient specified in the request signal.

106. The communication system of claim 104, wherein the action specified by the request signal is to send a reply message to the originator of the message.

107. The communication system of claim 104, wherein the action specified by the request signal is to delete the message from the storage and retrieval unit.

108. The communication system of claim 104, wherein the action specified by the request signal is to store the message in the storage and retrieval unit.

109. A communication system, comprising:
a base station;
a system; and
a wide area communications network for enabling the system to send messages to the base station, wherein the system, comprises:

means for storing a first message intended for a transmitting and receiving device in communication with the base station;

means for sending a second message through the wide area communications network to the base station, the second message not including the first message, but including a message identifier identifying the first message, whereupon receiving the second message, the base station transmits to the transmitting and receiving device a signal including the message identifier, but not including the first message, wherein, at the time the signal is transmitted to the transmitting and receiving device, the first message is not stored in the transmitting and receiving device;

means for receiving a request signal generated by the transmitting and receiving device, the request signal identifying an action and identifying the first message; and

means for performing the indicated action on the first message in response to the receiving means receiving the request signal.

110. The communication system of claim 109, wherein the action specified by the request signal is to forward the message to a recipient specified in the request signal.

111. The communication system of claim 109, wherein the action specified by the request signal is to send a reply message to the originator of the message.

112. The communication system of claim 109, wherein the action specified by the request signal is to delete the message from the storing means.

113. The communication system of claim 109, wherein the action specified by the request signal is to store the message in the storing means.

114. The communication system of claim 109, wherein the message is an e-mail message.

115. The communication system of claim 109, further comprising:
a second system in communication with the base station, the second system comprising:
means for storing a third message intended for the transmitting and receiving
device, wherein the third message is a voice message and the first message is a text
message;
means for sending a fourth message to the base station, the fourth message not
including the third message, but including a message identifier identifying the third
message, whereupon receiving the fourth message, the base station transmits to the
transmitting and receiving device a signal including the message identifier identifying the
third message, but not including the third message;
means for receiving a second request signal comprising an action identifier and a
message indicator corresponding to the third message; and
means for performing an action on the third message corresponding to the action
identifier.

116. The communication system of claim 109, further comprising a second base station
and a second system in communication with the second base station, the second system
comprising:

means for storing a third message intended for the transmitting and receiving
device, wherein the third message is a voice message and the first message is a text
message;
means for sending a fourth message to the second base station, the fourth message
not including the third message, but including a message identifier identifying the third
message, whereupon receiving the fourth message, the second base station transmits to

the transmitting and receiving device a signal including the message identifier identifying the third message, but not including the third message;

means for receiving a second request signal comprising an action identifier and a message indicator corresponding to the third message; and

means for performing an action on the third message corresponding to the action identifier.

117. A communication system, comprising:

a base station;

a transmitting and receiving device in communication with the base station; and

a system in communication with the base station, the system comprising:

a storage and retrieval unit for storing a first message intended for the transmitting and receiving device;

signal generating means for generating a signal comprising a message identifier that identifies the first message, wherein the first message is not included in the signal;

means for sending the signal to the base station, whereupon receiving the signal, the base station transmits the signal to the transmitting and receiving device;

means for receiving a request signal generated by the transmitting and receiving device, the request signal comprising a second message and an identifier identifying the first message; and

reply means for sending the second message to the originator of the first message, wherein the reply means sends the second message to the originator regardless of whether the first message was ever sent to the transmitting and receiving device.

118. A communication system, comprising:

a base station;

a system in communication with the base station; and
a transmitting and receiving device in communication with the base station, the transmitting and receiving device comprising:

 a receiver that receives from the base station a selective call signal having a message identifier identifying a message that is stored in the system, wherein the message is not included in the selective call signal, and at the time the receiver receives the selective call signal, the message is not stored within the transmitting and receiving device;

 a user interface for receiving from a user of the transmitting and receiving device one or more commands, wherein after the receiver receives the selective call signal, a reply command for sending a reply to the message is operable;

 a processor for generating a reply signal in response to the user interface receiving the reply command, the reply signal comprising a reply message and a message indicator identifying the message; and

 a transmitter for sending the reply signal to the system, whereupon receiving the reply signal, the system transmits the reply message to the originator of the message.

119. A communication system, comprising:

 a base station;
 a transmitting and receiving device in communication with the base station; and
 a system in communication with the base station, the system comprising:
 a storage and retrieval unit for storing a message intended for the transmitting and receiving device;

 signal generating means for generating a signal comprising a message identifier that identifies the message, wherein the message is not included in the signal;

means for sending the signal to the base station, whereupon receiving the signal, the base station transmits the signal to the transmitting and receiving device;
means for receiving from the base station a request signal generated by the transmitting and receiving device, wherein the request signal indicates two or more actions to be performed on the message; and
means for performing the two or more actions.

120. The communication system of claim 119, wherein one of the at least two actions is to send the message to the transmitting and receiving device and another of the at least two actions is to store the message within the storage and retrieval unit.

121. The communication system of claim 119, wherein one of the at least two actions is to send the message to the transmitting and receiving device and another of the at least two actions is to forward the message to a recipient.

122. A communication system, comprising:
a base station;
a transmitting and receiving device in communication with the base station; and
a system in communication with the base station, the system comprising:
a storage and retrieval unit that stores a message intended the transmitting and receiving device; and
a controller (a) for sending to the base station a first signal comprising a message identifier identifying the message, wherein the first signal does not include the message, whereupon receiving the first signal, the base station transmits the first signal to the transmitting and receiving device, and (b) for sending to the base station a second signal comprising at least part of the message identifier and a status indicator for indicating the

status of the message, whereupon receiving the second signal, the base station transmits the second signal to the transmitting and receiving device.

123. The communication system of claim 122, wherein the status signal indicates that the message is no longer available to be retrieved by the transmitting and receiving device.

124. In a system having a storage and retrieval unit for storing messages intended for a transmitting and receiving device, a method comprising the steps of:

receiving a message intended for the transmitting and receiving device;

storing the message in the storage and retrieval unit;

generating a signal comprising a message identifier that identifies the message, wherein the message is not included in the signal regardless of the size of the message;

sending the signal to the transmitting and receiving device;

receiving a request signal generated by the transmitting and receiving device, wherein the request signal specifies an action to be performed on the message stored in the storage and retrieval unit; and

performing the action in response to receiving the request signal.

125. The method of claim 124, wherein the action specified by the request signal is to forward the message to a recipient specified in the request signal.

126. The method of claim 124, wherein the action specified by the request signal is to send a reply message to the originator of the message.

127. The method of claim 124, wherein the action specified by the request signal is to delete the message from the storage and retrieval unit.

128. The method of claim 124, wherein the action specified by the request signal is to store the message in the storage and retrieval unit.

129. The method of claim 124, wherein the step of sending the signal to the transmitting and receiving device includes the step of sending the signal to a base station, which then transmits the signal to the transmitting and receiving device.

130. In a system having a storage and retrieval unit for storing messages intended for a transmitting and receiving device, a method comprising the steps of:

storing a first message intended for the transmitting and receiving device in the storage and retrieval unit;

sending a second message through a wide area communications network to a base station, the second message not including the first message, but including a message identifier identifying the first message, whereupon receiving the second message, the base station transmits to the transmitting and receiving device a signal comprising the message identifier;

receiving a request signal generated by the transmitting and receiving device, the request signal comprising an action identifier; and

performing an action on the first message corresponding to the action identifier.

131. The method of claim 130, wherein the action is to forward the first message to a recipient specified in the request signal.

132. The method of claim 130, wherein the action is to transmit a reply message to the originator of the first message.

133. The method of claim 130, wherein the action is to delete first the message from the storage and retrieval unit.

134. In a system having a storage and retrieval unit for storing messages intended for a transmitting and receiving device, a method comprising the steps of:

storing a message intended for the transmitting and receiving device in the storage and retrieval unit;

generating a signal comprising a message identifier that identifies the message, wherein the message is not included in the signal;

sending the signal to the transmitting and receiving device;

receiving a request signal generated by the transmitting and receiving device, the request signal comprising a reply request and a reply message; and

sending the reply message to the originator of the message, wherein the step of sending the reply message to the originator of the message is performed regardless of whether the message was ever sent to the transmitting and receiving device.

135. The method of claim 134, wherein the step of sending the signal to the transmitting and receiving device includes the step of sending the signal to a base station, which then transmits the signal to the transmitting and receiving device.

136. In a transmitting and receiving device for transmitting data to and receiving data from a communication system, a method comprising the steps of:

receiving a selective call signal having a message identifier identifying a message that is stored in a system, wherein the message is not included in the selective call signal, and, at the time the selective call signal is received, the message is not stored in the transmitting and receiving device;

receiving from a user of the transmitting and receiving device a command to reply to the message after receiving the selective call signal and before receiving the message from the system;

generating a reply signal in response to receiving the command, the reply signal comprising a reply message and a message indicator identifying the message; and

sending the reply signal to the system in response to generating the reply signal, whereupon receiving the reply signal, the system transmits the reply message to the originator of the message.

137. The method of claim 136, wherein the step of sending the reply signal to the system includes the step of sending the reply signal to a base station, which then forwards the reply signal to the system.

138. In a system having a storage and retrieval unit for storing messages intended for a transmitting and receiving device, a method comprising the steps of:

storing a message intended for the transmitting and receiving device in the storage and retrieval unit;

generating a signal comprising a message identifier that identifies the message, wherein the message is not included in the signal;

sending the signal to the transmitting and receiving device;

receiving a request signal generated by the transmitting and receiving device, the request signal indicating two or more actions to be performed on the message; and

performing the two or more actions.

139. The method of claim 138, wherein one of the at least two actions is to send the message to the transmitting and receiving device and another of the at least two actions is to store the message within the storage and retrieval unit.

140. The method of claim 138, wherein one of the at least two actions is to send the message to the transmitting and receiving device and another of the at least two actions is to forward the message to a recipient.

141. The method of claim 138, wherein the step of sending the signal to the transmitting and receiving device includes the step of sending the signal to a base station, which then transmits the signal to the transmitting and receiving device.

142. In a system having a storage and retrieval unit for storing messages intended for a transmitting and receiving device, a method comprising the steps of:

storing a message intended for the transmitting and receiving device in the storage and retrieval unit;

sending to the transmitting and receiving device a first signal comprising a message identifier identifying the message, wherein the first signal does not include the message; and

sending to the transmitting and receiving device a second signal comprising at least part of the message identifier and a status indicator for indicating the status of the message.

143. The method of claim 142, wherein the step of sending the first signal to the transmitting and receiving device includes the step of sending the first signal to a base station, which then transmits the first signal to the transmitting and receiving device.

144. A system, comprising:

means for generating a page;
means for including, in the page, a message identifier identifying a message and a message location identifier identifying where the message is stored; and
means for providing the page to a base station for transmission to a transmitting and receiving device.

145. The system of claim 144, wherein the location identifier identifies the system as the location where the message is stored.

146. The system of claim 144, wherein the location identifier identifies a particular storage unit as the location of the message, wherein the particular storage unit is remote from the system.

147. A first system, comprising:
means for receiving a data transmission from a second system, the data transmission including a system identifier that is associated with the second system and message information that identifies a message stored in the second system that is intended for a user of a transmitting and receiving device;
means for generating a page;
means for including the system identifier and the message information in the page; and
means for providing the page to the base station for transmission to the transmitting and receiving device.

148. A first system, comprising:
means for receiving a message intended for a user of the transmitting and receiving device;

means for storing the message;

means for transmitting information regarding the message to a second system, the information including a system identifier that is associated with the first system and message information that identifies the message;

means for receiving a request signal from the user, the request signal comprising an action identifier identifying an action to be performed on the message; and

means for performing the action.

149. A transmitting and receiving device for transmitting data to and receiving data from a communication system, comprising:

means for receiving a page transmitted from the communication system, the page comprising (1) a system identifier identifying a particular one of the plurality of systems and (2) message information identifying a message stored in said particular one of the plurality of systems and intended for a user of the transmitting and receiving device;

means for informing the user that the page has been received;

means for receiving input from the user specifying an action to be performed on the message; and

means for transmitting, to the system identified by the system identifier, an action identifier corresponding to the action specified by the user.

150. A system, comprising:

means for generating a page;

means for including, in the page, a message identifier identifying a message and a message location identifier identifying one of a plurality of message storage facilities; and

means for providing the page to a base station for transmission to a transmitting and receiving device.

151. A communication system, comprising:

 a base station;

 a plurality of information storage facilities; and

 a system, comprising:

 means for generating a page;

 means for including, in the page, a message identifier identifying information stored in one of the plurality of information storage facilities and a location identifier identifying said one of the plurality of information storage facilities; and

means for providing the page to the base station for transmission to a transmitting and receiving device.--

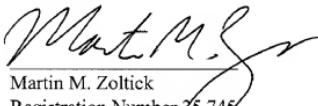
REMARKS

With the foregoing amendment, claims 82-151 are pending in the application, with claims 82, 89, 94, 96, 98, 102, 104, 109, 117-119, 122, 124, 130, 134, 136, 138, 142, 144, and 147-151 being in independent form. Claims 1-81 have been canceled. New claims 82-151 are added. No new matter has been added to the application.

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Prompt and favorable consideration of the present application is respectfully requested.

Respectfully submitted,



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SYSTEMS AND METHODS FOR SELECTIVE PAGING

RELATED APPLICATIONS

Reference is made to co-pending patent applications filed on September 19, 1997, entitled "Paging Transceivers and Methods for Selectively Retrieving Information," "Pager Transceivers and Methods for Performing Action on Information at Desired Times," and "Pager Transceivers and Methods for Selectively Erasing Information," each filed by Richard J. Helferich.

FIELD OF THE INVENTION

The present invention relates generally to systems and methods for selective paging and, more particularly, to paging systems and methods for selectively paging in response to messages received at a plurality of sources.

BACKGROUND OF THE INVENTION

In general, a paging receiver can be classified into one of four categories: an alert or tone only paging receiver, a numeric paging receiving, an alphanumeric paging receiver, or a voice paging receiver. One common characteristic of all of these paging receivers is that they monitor the air waves and notify the user when their particular address has been detected. For the alert or tone only paging receiver, the paging receiver would generate a tone or beep when its address is detected. The other

paging receivers, upon detecting their address, would additionally store a message associated with the address signal and display or play it to the user. The message for a numeric paging receiver would be a set of numbers, typically the calling person's telephone number, and the message for an alphanumeric paging receiver would be a set of numbers and/or letters. The user of an alphanumeric paging receiver could therefore receive a message in the form of a telephone number with some descriptive text. For the voice paging receiver, the message that is stored is a voice message that the user can later play to hear the message.

A paging receiver is typically a rather small electronic device and, accordingly, has a limited amount of memory for storing messages that have been received from a base station in a paging system. Because of the relatively small size of the memory, the paging receiver can store only a limited number of messages. A user can delete messages from memory but will oftentimes desire to save a message, such as temporarily until the user makes a note of the message or until he or she is able to respond to the page. The messages that are saved in memory, however, reduce the space in memory that is available to receive new messages. This demand on space in memory is increasing as the size of the messages continue to grow and as users receive a greater number of messages. Although more memory can be added to accommodate more messages, the added cost and space needed for extra memory runs counter to the desires to keep the paging receiver small and inexpensive. A need therefore exists for a paging receiver which can display messages while efficiently

using memory.

In addition to the demand on paging receiver memory, paging systems will be challenged as greater numbers of pages are being transmitted and as the size of the transmitted messages increases. Initially, when paging systems were only concerned with transmitting address signals of the paging receivers, the size of each transmission by the paging systems was relatively small. Paging receivers and paging systems, however, have undergone tremendous advances with paging systems now transmitting messages which can be hundreds of kilobytes or greater in size in addition to the address signals. Additionally, many paging receivers are actually paging transceivers which transmit acknowledgment signals back through the paging system. The capacity of the paging systems are therefore being challenged not only by messages of increasing sizes but also by reply signals transmitted from the paging transceivers to the paging system. The future of paging systems is therefore tied to the ability of the paging systems to control the number and size of the data transmissions and to provide additional features without sacrificing the quality of service to the user.

As discussed above, many paging transceivers are able to issue a reply or acknowledgment back to the base station in response to a received message. If the base station does not receive this reply or acknowledgment, then the base station assumes that the message has not been received and will repeatedly transmit the message until the reply or acknowledgment is received. Due to the high power levels at which the base station transmits its paging signals, the signals are usually easily

received by all paging transceivers located within the coverage area of the base station antenna. The paging transceivers, on the other hand, must operate at lower power levels and often cannot transmit signals at sufficiently high levels to reach the base station. For example, when a paging transceiver is located in a basement of a building, in a subway, or in an airplane, the paging transceiver may be unable to issue a reply that can reach the base station. As a result, the base station may continue to transmit a page to a paging transceiver and the paging transceiver will continue to receive the message but the base station cannot detect the reply being issued by the paging transceiver. This unnecessary transmission of duplicate messages and the ineffectual reply signals transmitted by the paging transceivers consume valuable resources of the paging system and of the paging transceiver.

For safety reasons, a user may at times have to turn off his or her paging transceiver. For instance, when the user is on an airplane, the transmissions from the paging transceiver can interfere with the instrumentation or communication within the cockpit of the plane. The paging transceiver therefore should not be operating within the plane or around other electronic equipment that are sensitive to interference from the signals transmitted by the paging transceiver. As another example, if the user is in an environment that contains electronic detonators for explosive materials, the signals transmitted by the paging transceiver could possibly trigger an explosion. The user therefore must turn his or her paging transceiver off to ensure that it does not transmit any reply or acknowledgment signals in response to a received page. Although it may

be dangerous for the paging transceivers to issue a reply signal in these situations, the signals transmitted by the base station may at times be safely received by the paging transceiver. Since the paging transceiver automatically issues a reply in response to a received message, the paging transceiver must nonetheless be turned off so as to not pose a risk to the user. During these times that the paging transceiver must be turned off, the user unfortunately is unable to receive any page or message. A need therefore exists for a paging transceiver that can notify a user of a message without automatically generating a reply message or acknowledgment to the base station.

SUMMARY OF THE INVENTION

The present invention solves the problems described above with methods and systems for selective paging. A paging system notifies a paging transceiver that a message has been received but does not initially transmit the associated message. The user, upon being notified of the message, can then download the entire message at a time convenient to the user, which allows the user to download messages at less-expensive off-peak hours and allows the user to place the paging transceiver at a location where it can easily receive the message and reply to the message. Since the messages are not initially transmitted to the paging transceiver, the paging transceiver can receive and store a greater number of pages with minimal increase in the size of memory. Further, because entire messages are not automatically transmitted and

since the user can position the paging transceiver to issue a sufficiently strong reply, traffic in the paging system can be controlled and actually reduced.

The system may transmit some identifying information about the page to the user without sending the entire message. For instance, the base station may identify the type of message, such as email, voice, or text, and also indicate the caller or other descriptive material about the message. The user can then determine the priority of the messages and whether he or she wants to retrieve the message, play the message, erase the message, store the message, forward, reply, or otherwise act on the message. The user is also given control over the messages stored remotely from the paging transceiver and can erase or store these messages from the paging transceiver. The paging transceiver may have a timer for allowing the user to program the paging transceiver to perform a desired function on a message at a particular time.

The information initially sent to the user may also indicate the location of the stored message. For instance, the system paging a particular paging transceiver to notify it that a page has been received need not be the system actually storing the content of the message. Instead, a plurality of systems may store the contents of messages with one or more of the systems paging the paging transceiver. The paging transceiver would be provided sufficient information on the system storing the message so that it can communicate with this system. The system paging the paging transceiver can therefore act as a clearinghouse for other messaging systems by notifying a user of all messages received regardless of their source or type.

Accordingly, it is an object of the present invention to provide systems and methods for paging that conserve memory in paging receivers.

It is another object of the present invention to provide systems and methods for paging that conserve valuable air time.

It is a further object of the present invention to provide systems and methods for paging that provide users with remote control over their messages.

It is yet another object of the present invention to provide systems and methods for paging that allow users to select when and how action should be taken on their messages.

It is yet a further object of the present invention to provide messaging systems and methods for notifying users of received messages.

It is also an object of the present invention to provide messaging systems and methods for providing control to users over message stored at remote locations.

It is still another object of the present invention to provide messaging systems and methods that notify users of messages received from multiple sources.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings, which are incorporated in and form a part of the specification, illustrate preferred embodiments of the present invention and, together with the description, serve to explain the principles of the invention. In the drawings:

Fig. 1 is a block diagram of a paging transceiver according to a preferred

embodiment of the invention;

Fig. 2 is a more detailed block diagram of the transceiver in the paging transceiver of Fig. 1;

Fig. 3 is a block diagram of a communication system according to a preferred embodiment of the invention;

Figs. 4A and 4B are flow charts depicting an exemplary set-up routine for establishing communications between the system of Fig. 3 and the transceiver of Fig. 1;

Fig. 5 is a flow chart depicting a paging process;

Fig. 6 a flow chart depicting of process of notifying a paging transceiver of an unread message;

Fig. 7 is a flow chart depicting a process of receiving a page at the paging transceiver of Fig. 1;

Fig. 8 is a flow chart depicting a process of selecting a function at the paging transceiver of Fig. 1;

Fig. 9 is a generic flow chart depicting a selective process performed at the paging transceiver of Fig. 1 for executing a desired function;

Fig. 10 is a block diagram of a paging system having multiple systems for storing messages; and

Fig. 11 is a diagram of a data transmission for the system in Fig. 10.

DETAILED DESCRIPTION

Reference will now be made in detail to preferred embodiments of the invention, non-limiting examples of which are illustrated in the accompanying drawings. With reference to Fig. 1, a paging transceiver 100 according to a preferred embodiment of the invention comprises an antenna 1, a transceiver 2, a user interface 3, a controller 4, and a memory 5. The single antenna 1 is preferably used for both receiving and transmitting signals, although the paging transceiver 100 may comprise a separate antenna for transmitting signals and a separate antenna for receiving signals.

The transceiver 2 is connected to the antenna 1 and is for transmitting signals from the paging transceiver 100 and for receiving signals directed to the paging transceiver 100. The signals that may be transmitted to, or received from, the paging transceiver 100 include, but are not limited to, such signals as selective call signals, command data signals, signals corresponding to a message, and information data signals. The transceiver 2 may comprise a transceiver found in two way pagers or mobile radios and preferably comprises a transceiver commonly used in a portable mobile radiotelephone.

The transceiver 2 is connected to the user interface 3, which contains all necessary input and output devices. The user interface 3 includes a microphone, speaker, alert transducer, LED or LCD display, keypad, and necessary switches. The user interface 3 may also contain other types of input/output devices depending on the

message application, such as a video display, camera, scanner, a printer, or a voice recognition device. The user interface 3 is not limited to these examples of user input/output devices but may comprise any input or output device which allows or assists communication between the user and the paging transceiver 100.

The transceiver 2 is connected to, and communicates with, the controller 4, which preferably comprises a digital signal processor (DSP) 4. The memory 5 is connected to the DSP 4 and is for storing messages or other types of information. The memory 5 may comprise static RAM, Dynamic RAM, Flash RAM, or any type of memory suitable for storing messages and allowing the retrieval of the messages. The amount of the memory 5 is preferably at least 4 MB for voice or text applications, although it may consist of a greater or lesser amount depending upon the specific message type application.

The transceiver 2, as shown in more detail in Fig. 2, includes an antenna interface 20 connected to the antenna 1. The antenna interface 20 directs signals received from antenna 1 to a receiver section 21 of the paging transceiver 100 and directs signals transmitted from a transmit section 24 to the antenna 1. The antenna interface 20 is preferably a duplexer, however an antenna switch or other device may be utilized to provide signal isolation between the receiver and transmitter sections 21 and 24. Alternatively, if paging transceiver 100 includes two antennas 1 with one for transmitting signals and the other for receiving signals, the transceiver 2 would not require any type of antenna interface 20.

The receive section 21 includes a receiver 22 and a receiver frequency synthesizer 23. The receiver 22 is connected to the antenna 1 through antenna interface 20 and receives the signals directed to the paging transceiver 100. The receiver frequency synthesizer 23, based on an input from a processor 27, selects the frequency at which the receiver 22 receives signals. The received signals are passed from the receiver 22 to the processor 27.

The transmit section 24 includes a transmitter 25 for receiving signals from the processor 27. The transmit section 24 also includes a transmitter frequency synthesizer 26 connected to the transmitter 25 which, based upon an input from the processor 27, selects the transmit frequency for the transmitter 25. The signals output by the transmitter 25 are supplied to the antenna interface 20 and then to the antenna 1.

The processor 27 comprises a central processing unit (CPU) having internal memory and switching capabilities. The CPU 27, for instance, comprises all necessary RAM and ROM memory, signal and data switching circuitry, signal processing circuitry, I-O Ports, and all standard program instructions and stored options commonly utilized in portable cellular telephones. The standard cellular telephone program instructions and CPU 27 may be obtained from a variety of suppliers. For instance, the instructions may be obtained from Wireless Link Inc. of Sunnyvale, California and the CPU 27 from GEC Plessey Semiconductor, Inc. of Scotts Valley, California.

The DSP 4 includes necessary I-O and program memory and are commonly utilized in cellular telephones. Any suitable DSP may be used in the paging transceiver 100. Alternatively, the controller 4 may comprise another type of electronic device, such as a codec or digital-to-analog/analog-to-digital conversion circuit or other type of modulator-demodulator including memory interface circuitry coupled to message memory 5 for reading and writing of messages.

The transceiver 2 also preferably includes a delay circuit 28. The delay circuit 28 may comprise a timer which informs the processor 27 of when a period of time has expired. The timer, for instance, may expire at a certain time of day, week, or month, or may expire a fixed period of time after a triggering event, such as one hour after the event. The time at which the timer 28 expires is preferably programmable through the user interface 3 and through processor 27. Additionally, the timer 28 preferably comprises a plurality of timers for notifying the processor 27 of when a plurality of different time periods have expired. Rather than a timer, the delay circuit 28 may alternatively operate to delay the occurrence of an event until a certain condition is satisfied. This condition, for instance, may be the strength of received signals or the receipt of a specified signal. The purpose of the timer 28 will become apparent from the description below.

With reference to Fig. 3, a system 30 according to a preferred embodiment of the invention is interconnected to a base station 34, both of which are connected to the Public Switched Telephone Network (PSTN) or to other telephone company

equipment 35. The system 30 comprises a paging terminal controller 31 which may comprise a controller circuit and associated memory having a database of subscriber listings and corresponding selective call address fields. The paging terminal controller 31 communicates with storage and retrieval unit 32 and correlates messages with subscriber listings. The storage and retrieval unit 32 may comprise a CPU or control circuit, message information and program memory, memory interface circuitry and a DSP with appropriate operational code for storage and retrieval of the desired messages. The input/output controller 33 contains all necessary input and output circuitry such as encoders and decoders, modems and required routing and control circuitry for communicating with the paging terminal controller 31, the storage and retrieval unit 32, the PSTN 35, and the base station 34.

A call setup routine 40 for establishing communication between the system 30 and base station 34 will now be described with reference to Figs. 4A and 4B. At step 41, a connection, such as a telephone connection, is routed through the PSTN 35 or in the case of paging transceiver 100 the switch 36, to the input/output controller 33. The input/output controller 33 determines at step 42 whether the connection is with an automated signaling device or with a person. If the connection is with a person, then at step 48 the storage and retrieval unit 32 is activated to produce one or more voice responses during the call in order to guide the person throughout the process.

If, at step 42, the input/output controller 33 determines that the call is from a device, such as a paging transceiver 100 or computer terminal, data is exchanged

between the paging transceiver 100 and system 30 at step 43. The type of data that may be exchanged includes, but is not limited to, the following types of data: identification data, command data, and information data. The data supplied from the PSTN 35 may also be exchanged at step 43 with this data including data for identifying the caller and subscriber, such as, for example, Caller ID and DNIS (Dialed Number Identification Service). Additionally, the data may be extracted from the base station 34. For example, the location of the paging transceiver 100 may be determined from a home location registry (HLR) and the HLR data may be utilized by the system 30 in order to determine the location of the paging transceiver 100, as opposed to having the paging transceiver 100 supply the location information to system 30.

After data is exchanged at step 43, the system 30 determines at step 44 whether an error occurred during the transmission between the system 30 and paging transceiver 100. If an error did occur, then at step 47 the process ends and the paging transceiver 100 is informed of the error. The error is preferably presented to the user in the form of status information produced at the user interface 3, such as with an alert tone or visual display on the LED or LCD display. An error may include, but is not limited to, the following errors: "system busy," "wrong ID," or "bill over due." If no error is detected, as determined by the system 30 at step 44, a function is enabled and executed at step 45. The function, as will be described in greater detail below with reference to Fig. 8, may be selected by the user from a group of available functions.

At step 46, housekeeping functions are performed both at the paging transceiver 100 and at the system 30 and the call is terminated at step 47.

If the call is from a person as determined at step 42, then the caller is provided with a voice response at step 48 and, with reference to Fig. 4B, the caller is then verbally prompted at step 49 to enter information. At step 50, the caller sends data to the system 30, such as by pressing the telephone keypad to generate DTMF tones. The data that may be sent by the caller includes, but is not limited to, ID code, pass code, mail box number, and subscriber number. The system 30 may respond to voice commands from a caller by utilizing a readily available voice recognition system, such as those presently in use by the telephone company to except collect calls. At 51, the system 30 determines whether an error has occurred. If an error is detected, the caller may be given an opportunity to correct the error or, as shown, the process may end at step 56. If no error was detected by the system 30 at step 51, a message, such as a voice message, is recorded and stored in the storage and retrieval unit 32 at step 52. At step 53, the system 30 determines whether a return receipt or a reply message is requested. If a return receipt or reply message is requested, the return address is entered by the caller or optionally issued by the system 30 and is stored by the system 30 in the storage and retrieval unit 32 at step 54. The system 30, for instance, may detect the address signal of the incoming call and, by default, store this number as the return address. After the return address is stored at step 54 or if a return address is not requested, the stored message is cross referenced to selective call

data corresponding to the intended paging transceiver 100 at step 55. Also at step 55, a flag is set in a transmission stack file at the paging terminal controller 31 for subsequently transmitting selective call signals representative of the selective call data to the targeted paging transceiver 100. Housekeeping is performed by the system 30 and the call ends at step 56.

The base station 34, as shown in Fig. 3, comprises a switch 36, a transceiver antenna 37, and a transceiver base station 38. In response to a received message, the system 30 passes control information to switch 36 for setting up a page call. The switch 36, for instance, may be a mobile telephone switching office (MTSO) for interfacing to the transceiver base station 38. In the send page mode, selective call signals having an address associated with the paging transceiver 100 are transmitted. The address may be an address code for a paging transceiver, a mobile telephone number (MIN) for a mobile radiotelephone, or type of identifying information for a communication device.

Command data and information data may also be communicated from the system 30 to the paging transceiver 100 through the base station 34. The command data and information data shall hereinafter be referred to as CI data, examples of which include the following: paging transceiver location, forward message, retrieve message, reply to message, paging transceiver ID, message identifiers, retrieval instructions, save message, erase message, message type, message length, time/date message received, system 30 ID, system 30 location, message address, message

location, battery life, message identifier, format code, compression type, message age, message priority, alert codes, energy saving commands, memory status, program data, provisioning data, acknowledgment data and requests, function codes, sender name, current time, number of messages, mailbox number, phone number, return address, alpha numeric short messages, general command requests, group calls, and signal strength.

The address and command data and information may be transmitted over any suitable communication system. For instance, the data may be communicated over a paging system, a cellular system having short message service capabilities, such as GSM-SMS, a Cellular Digital Packet Data (CDPD) system, Personal Communications Services, or any other type of mobile radiotelephone system or communication system. Furthermore, the paging transceiver 100 preferably is able to communicate over more than one system, such as with both a paging network and a mobile radiotelephone network.

With reference to Fig. 5, a flow diagram 60 for performing a page call is shown. At step 61, the system 30 locates the current message flag from its transmission stack within paging terminal controller 31 and communicates with base station 34 for setting up a page call. The base station 34 transmits selective call signals and CI data to the targeted paging transceiver 100. At step 62, the system 30 determines whether an acknowledgment (Ack) was received from the paging transceiver 100 indicating that the page call was received. If an acknowledgment was

not received, then at step 70 the system 30 determines whether an acknowledgment is a system 30 option. If an acknowledgment is required, then at step 71 the system 30 assigns the page call a priority in the transmission stack and eventually returns to step 61 for re-transmission. If the acknowledgment is received at step 62, the system 30 sets an acknowledgment flag (Ack flag) corresponding to the stored message.

If an acknowledgment is not a system requirement, as determined at step 70, or after posting the acknowledgment flag at step 63, the system 30 sets a timer at step 64 and waits a period of time before proceeding to step 65. At step 65, the paging terminal controller 31 determines if the stored message has been read. If the message has been read, then at step 66 the system 30 posts a read flag in the subscriber data base to indicate that the message was delivered and read and at step 67 the process ends.

If, at step 65, the message had not been read, then at step 68 the system 30 determines the priority of the message and proceeds to step 69. If the priority is high, as determined at step 69, then at step 61 the page call is returned to the transmission stack at the designated priority level for re-transmission. If, on the other hand, the priority is not high as determined at step 69, then the message has a low priority and the process ends at step 67.

An alternate routine 80 for notifying a paging transceiver 100 that an unread message is waiting is shown in Fig. 6. At step 81, the paging terminal controller 31 sorts through subscriber listings which have a corresponding unread and unnotified

message in the storage and retrieval unit 32 and sends a page request to base station 34. At step 82, the switch 36 checks a home location registry (HLR) to determine the registered location and status of the remote paging transceiver 100. A page call is processed by transmitting selective call from transceiver base station 37 at step 82. If a page acknowledgment is desired for verification that the paging transceiver 100 recipient received the selective call signals, an Ack signal is manually or automatically transmitted from the paging transceiver 100 to base station 34 for storage in the subscriber database of paging terminal controller 31 at step 82.

At step 83, a notified flag is set in the subscriber data base corresponding to the unread message stored in the storage and retrieval unit 32 and the paging process for the current unread message ends at step 84. If at step 82 an acknowledgment signal was not received, the message is assigned a new priority and the process is subsequently repeated. Optionally, a plurality of priorities may be assigned to acknowledged and not acknowledged unread messages so that the paging transceiver 100 is sent a number of calls until the message is read by the subscriber.

In the preferred embodiment, the base station 34 is part of a mobile radiotelephone network and the paging transceiver 100 is paged over the designated paging channel or the control channels of the network. In addition to paging the paging transceiver 100, the short messages or other data transmitted to the paging transceiver 100 is also preferably transmitted over the paging channel or control channels. Although the paging is preferably performed through a mobile

radiotelephone network, the selective call signals may alternatively be routed to a paging system for transmitting an address code and CI data over an independent paging transmitter. In such a configuration, the paging transceiver 100 may be configured to have a separate paging receiver or transceiver compatible with the paging transmitter or paging transceiver. Since radio pager devices require much less energy than portable cellular telephones, a paging transceiver 100 configured with a low energy paging receiver would reduce energy required for receiving selective call signals and allow high energy circuitry of the paging transceiver 100 to be turned off until the user needs to retrieve or transmit messages. Other variations and modifications will be apparent to those skilled in the art.

A process 90 for receiving messages at a paging transceiver 100 is shown in Fig. 7. A selective call signal including an address is received by receive section 21 of the transceiver 100 at step 91. At step 92, the demodulated signal is processed by the CPU 27 to compare the received address with an address code stored in the CPU 27 memory. If the received address code does not match the stored address, flow returns to step 91 and the transceiver 100 continues to monitor transmissions for its address. When the address corresponds to the pre-stored address code, as determined at step 92, the CPU 27 stores and processes any corresponding received CI data at step 93.

Next, at step 94, the CPU 27 determines if an acknowledgment transmission is required by the paging transceiver 100. The CPU 27 may always enable an

acknowledgment in order to confirm at the system 30 or base station 34 that the selective call signals were received by the targeted paging transceiver 100. Alternatively, the CPU 27 may never enable an acknowledgment from the transceiver 100, which is useful in explosive environments where transmissions are dangerous and in environments where a reply from the paging transceiver 100 may cause harmful interference to other electronic equipment. The CPU 27 may, as another option, enable an acknowledgment only when acknowledgment data is contained within the received CI data, such as with a remote request. Finally, the CPU 27 may enable an acknowledgment in response to a user-enabled command.

Returning to step 94, if the paging transceiver 100 allows for an acknowledgment then at step 95 the CPU 27 determines whether the acknowledgment is required or if the acknowledgment is a user option. If the acknowledgment is required to be automatic, then an acknowledgment flag is set at step 97. If, on the other hand, the acknowledgment is not automatic but rather optional, then at step 96 the CPU 27 determines whether an acknowledgment has been enabled. If the acknowledgment has been enabled, then the acknowledgment flag is set in step 97.

At step 98, the CPU 27 determines whether short messages may be transmitted. Short messages may include CI data or any type of short coded message which was pre-stored by the user in the paging transceiver 100. If short messages are enabled, at step 99 the CPU 27 sets the short message flag. At step 100, the paging transceiver 100 transmits all flagged data, including CI data, to the base station 34 for

processing by the system 30. The CPU 27 generates status information corresponding to received CI data and passes any necessary user status information to the user interface 3 for visual and/or audible reception by the user. For example the user may hear an alert beep, feel an alert vibration, view an LCD indicating the number of unread messages, view an animated graphic display, hear a synthesized voice indicating that an urgent message is waiting, or receive other types of indications. At step 101, the CPU 27 performs house keeping functions and the routine ends.

Fig. 8 depicts a user function flow diagram 110 for user selectable function requests at the paging transceiver 100. At step 111, the user selects a function to be performed from available functions 112 to 117. These functions are exemplary functions that may be available and additional functions may exist. One or more of these functions are preferably selected through the user interface 3. The messages may be selected by the user to be forwarded to one or a plurality of addresses at step 112. Items such as messages and send message lists may be selected by scrolling through the message number or name. The selected messages for forwarding may reside at the paging transceiver 100 or at the system 30. The user may also select the function of saving a selected message at step 113. At step 114, selected messages are retrieved for reproduction and/or storage. At step 115, messages may be sent to another one or plurality of recipients, such as to another paging transceiver 100. At step 116, the selected message may be erased and at step 117, a reply may be sent to the originator of a selected message. With any of the functions selected at steps 112

to 117, the system 30 may act upon the entire information or, alternatively, may instead operate on only the message identifier. For instance, if the user selected the desired action of forwarding a message, the system 30 may send the entire message to a designated recipient or may instead send just the message identifier.

Fig. 9 depicts processing performed by the paging transceiver 100 in response to the selection of any one of the functions 112 to 117 shown in Fig. 7. At step 131, the function is identified by the CPU 27 and other processing occurs prior to step 132 where the CPU 27 determines whether a call is required. If a call is not required to perform the function, then at step 133 the CPU 27 performs the requested function and the process ends at step 140.

If, on the other hand, a call is required, then at step 134 the CPU 27 next determines whether a call is already in progress. If a call is in progress, the CPU 27 exchanges data 135 with the system 30 and base station 34 at step 135 and the function is performed or executed at step 136. The data that is exchanged at step 135 includes a request signal that is sent from the paging transceiver 100 to the system 30 specifying the desired action and the particular information or message. If a call is not in progress, then at step 137 the CPU 27 preferably asks the user if a call should be made and receives the user's feedback at step 138. If the user elects not to call, then a delay occurs at step 141 with delay circuit 28.

As discussed above, the delay circuit 28 may be a timer which expires at a set time, such as at 1:00 a.m., when traffic and costs are low or may expire after a period

of time, such as 1 hour. The set time or the period of time may be programmed by the user or may be determined by default values. Additionally, the delay circuit 28 may operate to delay operation until the signal strength is above a certain threshold. The delay circuit 28, in this example, may therefore comprise a level detector and a comparator circuit for comparing the signal strength to the threshold level. The delay circuit 28 would therefore advantageously delay the paging transceiver 100 from initiating communication until signal strength is sufficiently high. Moreover, the delay circuit 28 may alternatively comprise a communication monitor circuit for determining when the paging transceiver 100 is communicating before performing a function. Also, the delay circuit 28 may detect transmissions and trigger a certain event in response to a received communication. As an example, if the paging transceiver 100 receives a certain type of message or a message from a particular source or individual, the paging transceiver 100 may automatically perform a programmed action. The paging transceiver 100 would therefore be able, for instance, to automatically forward all messages received from one recipient to a designated person.

After the timer 28 is triggered or if the user decides to call now, then at step 139 the CPU 27 sets up a call to the base station 34. Once a call is established, then processing proceeds to step 135 for the exchange of data and then to step 136 for the performance or execution of the function. At step 140, the process ends. The process shown in Fig. 9 is not limited to the performance of a single function but also

represents the processing if the user selects a number of functions. For example, the user may select the functions of retrieving a message at step 114 and forwarding a message at step 112 and these functions may be performed in unison with each other or sequentially one after each other.

The paging transceiver 100 and system 30 may exchange status information during messaging calls initiated by the paging transceiver 100 or by selective call, such as page calls, initiated by the system 30. The status information may contain information corresponding to messages stored within the paging transceiver 100 or within the system 30. For example, if the system 30 erases a message that has resided in its memory for too long a period of time, such as an unsaved, read message, the system 30 may inform the paging transceiver 100 that the message no longer exists. If the message identifier stored in the paging transceiver 100 no longer corresponds to a message stored in the system 30 or in the paging transceiver 100, the CPU 27 removes the identifier for the no-longer existing message.

When the forward message function 112 is selected, flow proceeds to step 131 where the CPU 27 reads information pertaining to the message or plurality of messages selected by the user to be forwarded. The information may include a message identifier, location data, message length, message type, destination addresses, or other CI type data as previously described. At step 132, the CPU 27 determines whether the message cannot be forwarded without communicating with the system 30. At step 134, the CPU 27 determines if a call is in progress. If a call is in progress, CI

data is exchanged at step 135 with the system 30 for forwarding messages. If the messages to be forwarded are located at the system 30, the messages are simply flagged for forwarding to the appropriate addresses. At step 136, the messages are forwarded and confirmation is communicated to the paging transceiver 100. If the message is not located at system 30, the message is transmitted from the paging transceiver 100 to system 30 at step 136 and the process ends at step 140. If at step 134, it is determined that a call is not in progress, the user is asked if the message should be forwarded now at step 137. If the user selects yes, a call is established with system 30 at step 139 and flow continues as previously described. If a call should not be made, the CPU 27 keeps the forwarding information in memory for forwarding the message during a subsequent call with system 30 and the process ends at step 140.

In operation, the user selects a message or messages to be forwarded and also selects a recipient for receiving the message. If the message resides at the system 30, the message is simply forwarded to the addressed recipient. If the message is located in the paging transceiver 100, the message is first transmitted to the system 30 at step 135 before it can be forwarded to the intended recipient. In order to conserve time, the system 30 will not accept receipt of a message from the paging transceiver 100 if the same message already exists at the system 30. The system 30 will simply perform the required function with the already present duplicate message.

If the function selected is the save message function 113, then at step 131 the message identifier to be saved is read by CPU 27. At 132, the CPU 27 determines if

the message identifier selected corresponds to a message already stored in message memory 5 and if the selected function can be processed off-line. If yes, at step 133 the CPU 27 sets a save message flag in order to protect the message stored in message memory 5 from being over-written and the process ends at step 140.

If at step 132 the CPU 27 determines that the message is not stored at the paging transceiver 100, then at step 134 the CPU 27 determines whether a call is in progress. If a messaging call is in progress, CI data instructing the system 30 to save the message is sent. The system 30 flags the stored message and sends a message saved acknowledgment to the paging transceiver 100 at step 136. The CPU 27 converts the acknowledgment to status information and informs the user that the message is saved at the system 30 and the process ends at step 140. If at step 134, it is determined that the paging transceiver 100 is not currently in communication with the system 30, the CPU 27 flags the message identifier for saving and the user is asked if the call should be made now at step 137. If no, at step 138 the flag is kept for transmission to system 30 at a later time, such as during a selective call to the paging transceiver 100 or during a messaging call to system 30. If yes, then the CPU 27 sets up a call at step 139 for transmitting the save flag and CI data as previously described.

When the retrieve message function is selected at 114, then at step 131 the message identifiers corresponding to messages to be returned are read from the CPU 27 memory for retrieving the message. Additionally, the CPU 27 may read message location information, system ID information, address information, message length

information, message type information as previously described. At step 132, the CPU 27 determines the location of the message and determines if a call to system 30 is required. If the message is stored in message memory 5, then at step 133 the CPU 27 retrieves the message. The message, for instance, may be an audio message, visual message, text message, or electronic signal intended to be transferred to another device.

At step 132, if the message does not reside in message memory 5, the CPU 27 determines that a call is required to retrieve the message and, at step 134, determines if a call is in progress. If a call is in progress, CI data, such as which messages to retrieve, message length, message type, and message identifier, is exchanged at step 135. At step 136, the message is retrieved and simultaneously stored in message memory 5 by the DSP 4. The appropriate status information corresponding to the message is stored by the CPU 27 in its memory and the process ends at step 140. If at step 134 a call is not in progress, the user is asked if the call should be made now or if during another call at step 137. At step 138, if the user chooses to place the call, the call is set up at 139. If the user chooses to delay the call until another session, the message is left flagged for retrieval at the next session and the process ends at step 140. With the timer 28, the message may be retrieved at a chosen time or a retrieval instruction may be sent from system 30 to paging transceiver 100 for causing the paging transceiver 100 to automatically retrieve a message or plurality of messages at a time designated by system 30. For example it may be desirable to have emergency

weather information automatically retrieved during night-time hours when telephone line charges and air time charges are less expensive. The above described options may also be utilized for forwarding messages, erasing messages, saving messages, sending messages, and replying to messages as will be shown in more detail hereinafter.

With the send message function 115, in order to send a message, the message must first be stored at the paging transceiver 100 or at the system 30. The process of storing or recording messages is well known to those of ordinary skill in the art and accordingly will not be described in further detail. Examples of these devices are described in U.S. Patent No. 4,602,129 to Matthew, et al., titled "Electronic Audio Communications System With Versatile Message Delivery," and in U.S. Reissued Patent No. Re. 34,976 to Helferich et al, titled "Analog/Digital Voice Storage Cellular Telephone," both of which are incorporated herein by reference. The system 30 and paging transceiver 100 can record, store and retrieve a plurality of different types of messages as previously described depending on the application required.

If the send message function 115 is selected, the CPU 27 identifies the message to be sent and cross references it to the selected recipient address information. At step 132, the CPU 27 determines whether a call is required at step 132. The subsequent processing of sending a message should be apparent from the description above for forwarding a message and accordingly will not be duplicated in order to simplify description of the invention. The message to be sent may reside in

the paging transceiver 100 or in the system 30. If the message resides in the system 30 and in the paging transceiver 100, the message in the system 30 corresponding to the CPU 27 message identifier will be sent in order to conserve air time. If the message does not reside in system 30, the message will be sent from the paging transceiver 100 to the system 30. If the message is to be sent from the paging transceiver 100, the message may be a pre stored message or alternatively, the message may be transmitted to system 30 by paging transceiver 100 in real time during a call session between system 30 and paging transceiver 100.

If the erase message is selected at step 116, the erase message function allows a user to erase messages stored at the system 30 or at the paging transceiver 100 depending on the mode of operation. A message may be erased at a paging transceiver 100 without erasing the message identifier. If a message is erased at the paging transceiver 100 and the identifier still exists in message memory 5, the message can be retrieved from the system 30. In order to remove a message identifier at the paging transceiver 100, the message must be erased at the system 30. This feature causes the user to manage the messages at the platform, thereby conserving memory space at the storage unit 32. At step 131, the selected message to be erased is identified and the user is asked if the selected message in the paging transceiver is to be erased or if both copies of the message are to be erased. If the local message only is selected to be erased, the message identification information is kept and at step 133 the CPU 27 flags the message stored in memory 5 for erasure or overwriting. In other

words, the message still exists but may be over-written by another message when memory space is required and, until then, may be retrieved from message memory 5. If at step 132 a decision was made to erase both copies of the message, then at step 134 the CPU 27 determines if a call is in progress. If yes, at step 135 the CI data is exchanged instructing system 30 to erase the message. At step 131, the system 30 transmits an acknowledgment that the message was erased, the CPU 27 flags the local message for erasure, the identifier is removed and both copies of the message and the identifiers are erased.

If at step 134 the CPU 27 determines that a call is not in progress, the CPU 27 at step 137 erases the local message and the user is asked if the system 30 copy of the message needs to be erased now. If yes, the call is established at step 139 and the process continues as previously described. If no, the necessary flags are set for erasing the remote message during the next communication with system 30 and the timer 28 is activated. The timer 28 may be utilized for a timed erase of the message stored at system 30.

The message reply function 117 is for sending a reply to an already received message. A reply message utilizes the same process as the send message function except that a return address is already correlated to the message targeted for a reply. During the send message function 115, the user is required to select an address or destination for the message to be sent. In other words, the user must know the destination or address in advance. The message reply function 117 does not require

that the user know the address of the recipient because the message being replied to has a corresponding return address. As with the send message function 115, a reply message may be sent in real time or it may be pre-recorded and stored in the paging transceiver 100 for transmission to system 30. Additionally, the reply transmission may be delayed for a set period of time as previously described with timer 28.

In summary, as discussed above with reference to Figs. 5 and 6, the system 30 does not transmit the entire message to the paging transceiver 100 but rather notifies the user that a message is waiting. The paging transceiver 100, as discussed above with reference to Fig. 7, stores data associated with the page and possibly a short message. The user can then select a desired one of plurality of available functions, such as those shown in Fig. 8, and the paging transceiver 100 will process the request in accordance with Fig. 9.

With the system 30 and paging transceiver 100, the paging transceiver 100 can notify a user of a message without receiving the entire message. The user can then decide to act upon the message at a time convenient to the user. Rather than receiving the message with the alert, as occurs with conventional paging receivers, the user can control the time when he or she wants to receive a message and may even decide not to retrieve the message. After the user has been notified, the user can then control the paging transceiver 100 to retrieve the message from the system 30, to save the message at either the system 30 or paging transceiver 100, to forward the message to an indicated recipient, to reply to the message, or to erase the message from the

paging transceiver 100 or from the system 30.

With paging transceiver 100, the user can position the paging transceiver in a desired location before initiating communication with the system 30. Thus, if the user is paged by system 30 while the user is in a subway, basement, or on an airplane, the user can postpone the delivery of the message until the paging transceiver 100 is in a better location to receive and reply to the message. Similarly, the user may be in an explosive environment or near sensitive electronic equipment and may postpone delivery of the message and a reply from the paging transceiver 100 until the user is out of the explosive environment or far enough away from the sensitive electronic equipment. The paging transceiver 100 and system 30 therefore give the user control over the messages stored in the system 30.

The paging transceiver 100 and system 30 conserve both valuable air time and also paging transceiver message memory 5. The system 30 does not automatically deliver each message to the intended paging transceiver 100 but instead allows the user to exercise control over the message. Since a message may be many bytes in length, perhaps kilobytes, megabytes, or even greater, the benefit to the system 30 and to the base station 34 in not having to transmit each message can be quite substantial. Also, since each message is not automatically delivered to the paging transceiver 100, the paging transceiver 100 does not become overloaded with messages and instead the user can choose to act on selective messages, such as by retrieving only certain messages. The user, additionally, may decide not to act on any of the messages

through base station 34 and may call the system 30 through the PSTN 35, thereby bypassing the base station 34 and its associated charges and expenses.

The paging transceiver 100 and system 30 are not limited to voice messages in a paging system. Rather, the paging transceiver 100 and system 30 may operate with any type of message or information, including, but not limited to numeric messages, alphanumeric messages, voice or other audio messages, video messages, graphics or even data. The paging transceiver 100 may be a separate paging transceiver, may be integral with a mobile radiotelephone, or may be incorporated into other devices.

For instance, the paging transceiver 100 may be integrated into a portable radio, CD, or tape player. The paging transceiver 100 could receive messages from system 30 which indicate portions of songs that may be sampled by the user. The user may browse through a listing of available music and select a desired song. The paging transceiver 100 then communicates with the system 30 to retrieve the selected song and the user can then play the song at the paging transceiver 100.

As another example, the messages may be video messages which the user can browse through and select only desired messages. The paging transceiver 100 may be integral with a television set and the video messages may be promotions for new movies or shows. Alternatively, the paging transceiver 100 may be integral with a game console and the video messages may be clips of new games that are available with that game console. Other applications for the paging transceiver 100 and system 30 will be apparent to those skilled in the art.

The information or message available to a paging transceiver 100 need not be static but instead may be dynamic. In other words, when a paging transceiver 100 is alerted that information is available, the information may be updated or otherwise change from the time that the user was alerted. As an example, the user may receive a weather alert and by the time the user decides to receive the information the information would be updated to reflect current weather conditions. The identifier for the information therefore does not limit the content that may be stored as the information available to the user.

The system 30 is not limited to transmitted only one alert at a time to one paging transceiver 100. Instead, the system 30 may send a plurality of alerts to a single paging transceiver 100 and each of those alerts may be broadcast to a plurality of paging transceivers 100. For instance, the system 30 may broadcast information to a plurality of transceivers 100 that share a common set of numbers within their mobile identification numbers. If the system 30 sends a plurality of alerts to a paging transceiver 100, these alerts may be displayed by the user interface 3 and the user can scroll through and act upon the messages as desired.

As discussed above, the system 30 and paging transceiver 100 allows information to be remotely acted upon by the paging transceiver 100. The system 30, however, also allows users access to their information via conventional ways, such as the PSTN 35. Therefore, a user may receive the alert with a paging transceiver 100 and decide to call in through the PSTN 35 to listen or otherwise act upon the message.

The system 30 preferably is connected to the Internet whereby users can also gain access and act upon their information via the Internet.

The paging transceiver 100 preferably alerts the user both when a message identifier signal has been received and when complete messages have been received. The alerts may comprise any suitable indication to inform the user that the paging transceiver 100 has received a communication, such as a tone, vibration, or visual display. The alerts for a received identifier and for a received message are preferably different so as to allow a user to easily differentiate between the two communications.

The example provided in Fig. 3 was a single system 30 for storing messages on behalf of a plurality of paging transceivers 100. The invention, however, may include any number of systems 30 for storing messages with each system 30 storing information for a transceiver 100 being considered a content provider. For instance, as shown in Fig. 10, a messaging system 200 may comprise a plurality of systems 30 connected to the PSTN 35 with system 30A being associated with base station 34A and transceiver antenna 37A and system 30B being associated with base station 34B and transceiver antenna 37B. Although three systems 30 are shown, the system 200 may include any number of systems 30 and, although two base stations 34 are shown, each system 30 may be associated with a base station 34 and transceiver antenna 37 or only one of the systems 30 may be associated with a base station 34 and transceiver antenna 37. Furthermore, each system 30 need not include a paging terminal controller 31 or a storage unit 32. System 30C, for instance, may include a storage

and retrieval unit 32 and input/output controller 33 but not a paging terminal controller 31 and may page the paging transceiver 100 through the paging terminal controller 31 in system 30A. Conversely, a system 30, such as system 30A, may include a paging terminal controller 31 and an input/output controller 33 but not a storage and retrieval unit 32. Further, the input/output controller 33 need not be a separate unit but may be incorporated into the paging terminal controller 31 if the system 30 does not include a storage and retrieval unit 32, or into the storage and retrieval unit 32, if the system 30 does not include a paging terminal controller 31. The systems 30 and base stations 34 may communicate with each other through the PSTN 201 or through links or lines other than or in addition to the PSTN 201, such as through an SS7 backbone of a wireless network or through the Internet.

Additionally, each of the base stations 34A and 34B may be part of a paging network but is preferably part of a cellular network. Either one or both of base station 34A or 34B may page the paging transceiver and either one or both of the base stations 34A or 34B may deliver the contents of messages to the paging transceiver. Each of the systems 30A, 30B, and 30C may store messages on behalf of a user with the messages being of the same or different types. Furthermore, the messages stored within a single system 30 may be all the same type or may differ from each other.

As an example, system 30A may store voice mail messages and email messages directed to the user's office, system 30B may store voice mail messages directed to the user's home, and system 30C may store audio messages. The base

station 34A acts as a clearinghouse for all messages delivered to the user to any of the systems 30 and pages the paging transceiver 100 whenever a message is received. Thus, when a voice mail message or email message is received at system 30A, the system 30A delivers a page to base station 34A which is then delivered to paging transceiver 100. When a voice message is received at system 30B, the system 30B sends information about the message to system 30A and system 30A then delivers a page to base station 34A for delivering the page to the paging transceiver 100. Similarly, when system 30C has an audio message it notifies system 30A and system 30A acts to have the page delivered to the paging transceiver 100.

An example of the data transmission 201 sent from system 30B or 30C to system 30A is shown in Fig. 11. The data transmission 201 includes system ID information for identifying the system 30 from a potential plurality of systems 30. The system ID information may be an address code or may comprise the telephone number of the system 30 and may be automatically captured by system 30A, such as from Caller ID or from DNIS information. The data message 201 also identifies the paging transceiver(s) 100, such as with an address code or MIN. For many systems 30, the message or information stored will often be for a single user whereby the transceiver ID would be the address code or MIN for that single paging transceiver 100. For other systems 30, however, the system 30 may want to broadcast a single message to a plurality of paging transceivers 100 whereby the transceiver ID may be a code that identifies a predefined group of paging transceivers 100.

The data transmission 201 also includes message information. The message information includes information identifying the message and preferably also includes information specifying the type of the message, the length of the message, and the message priority. The message identification may identify the message with a unique code, such as a number, or may specify the address in system 30 for the message. The message type advantageously indicates whether the message is a voice message, email message, audio message, video message, or text message. The message length indicates the size of the message and the message priority indicates the priority level of the message. For instance, the user can designate priorities based upon the telephone number of the caller leaving the message or the priority may be set by the caller. Although the data transmission 201 preferably includes this information, the data transmission 201 may include additional or fewer fields than the example provided in Fig. 11.

The data transmission 201 also includes additional information that may be relayed and presented to the user. For instance, for many systems 30 that receive and store messages on behalf of the user, the additional descriptive information preferably comprises a return address for identifying the caller's telephone number to inform the user as to who left the message. For other systems 30 which may generate their own information, the additional information preferably describes the information available to the user. For instance, for a system 30 that allows users to sample songs, the additional information would indicate the title and the artist of the song and may also

specify the cost to retrieve and play the song. Other uses of the additional information will be apparent to those skilled in the art.

The page sent to the paging transceiver 100 includes most, if not all, of the data transmission 201. The information transmitted to the paging transceiver 100, with reference to Fig. 7, may be inserted into a short message transmitted to the user at step 98. From the system ID information, the paging transceiver 100 can determine which system 30 it needs to respond to in order to act upon a message. For instance, system 30A may page the paging transceiver 100 and indicate that system 30B has a stored message. If the user selects the function of retrieve function, then the paging transceiver 100 can contact system 30B through base station 34B to retrieve the desired message. The paging transceiver 100 as discussed above may instead respond to base station 34A to retrieve the message and base station 34A would communicate with system 30B to retrieve or otherwise act upon the message.

The message information is used by the paging transceiver 100 to inform the user of the message or information stored at the system 30. The message type, length, priority, and additional descriptive material may be displayed or otherwise indicated to the user at the paging transceiver 100. From this information, the user can decide what type of action to take upon the message or information at the system 30.

As described with reference to Fig. 9, a call to the system 30 may be required in order for the paging transceiver 100 to perform a desired function. If a call is required, the paging transceiver 100 relays information in the data transmission 201 to

the system 30. If the paging transceiver 100 responds to a system 30 other than the one storing the message or information, the paging transceiver 100 identifies the system 30 storing the message or information and also identifies the message. As discussed above, the message may be identified in a number of ways, such as with a message code or by specifying the location in memory where the message is stored. The call to the system 30 would automatically provide the transceiver identification information to the system 30, although the paging transceiver 100 could provide this information with the other information provided to the system 30.

Upon receiving a call from the paging transceiver 100, the system 30 reads the transceiver identification and message information to find the information requested by the paging transceiver 100. The information obtained from the paging transceiver 100 at the system 30 and the transfer of the requested information to the paging transceiver occurs at step 135 in Fig. 9.

The system 200 can present substantial cost savings to conventional paging systems. With a conventional paging system, the entire message is transmitted to the location of the paging transceiver 100. For instance, if the user's home base is in Chapel Hill, North Carolina, and the message originates in Chicago, Illinois, then the message is typically sent over the PSTN 35 to the home base. With nationwide paging, the user may have traveled to San Diego, California whereby the home base would then send the entire message from Chapel Hill to San Diego. With system 200, on the other hand, only the data transmission 201 is transmitted from Chicago to

Chapel Hill and from Chapel Hill to San Diego. The actual message, in contrast, is sent directly from the storage facility in Chicago to San Diego, thereby reducing charges associated with the transfer between Chicago and Chapel Hill. Moreover, the data transmissions 201 between systems 30 may occur over the Internet. These transmissions, for instance, may be formatted according to the Voice Profile for Internet Mail (VPIM) and the addresses of the transceivers 100 may be determined from an open directory service, such as the Lightweight Directory Access Protocol (LDAP) or X.500.

The systems 30 and 200 allow a user to easily manage the multitude of message that are commonly received every day. Conventionally, a user would have to call in to the office voice mail to retrieve voice messages, call home to retrieve voice messages sent to the house, and connect with the computer network at the office to retrieve email messages. Although paging systems have been used to notify a user that a voice mail message or other message has been received, the user would still have to call in to a separate system to actually retrieve the message. The system 200, on the other hand, enables a user to be notified of all messages, regardless of their type and regardless of their location and furthermore allows the user to selectively retrieve, save, erase or perform other functions on the messages. The systems 30 and 200 and paging transceiver 100, moreover, allow the user to exercise control over the remotely stored messages; the user can selectively store, save, retrieve, erase, forward, send or otherwise perform operations on messages stored at a remote location.

The forgoing description of the preferred embodiments of the invention has been presented only for the purpose of illustration and description and is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Many modifications and variations are possible in light of the above teaching.

The embodiments were chosen and described in order to explain the principles of the invention and their practical application so as to enable others skilled in the art to utilize the invention and various embodiments and with various modifications as are suited to the particular use contemplated.

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CLAIMS

What is claimed is:

1. A system for delivering information to an intended recipient, comprising:
 - a storage unit for storing information available for the intended recipient; and
 - an input/output controller for directing a data signal to a base station to notify the intended recipient of the available information, wherein the data signal includes an information identifier signal for identifying the available information and an address signal for identifying a selective transceiver of the intended recipient but does not include all of the available information;
 - wherein the input/output controller is for performing a desired action on the available information after receiving a request signal and the request signal specifies the desired action and is generated by the selective transceiver.
2. The system as set forth in claim 1, wherein the information stored by the storage unit comprises an audio file.
3. The system as set forth in claim 1, wherein the information stored by the storage unit comprises a text file.

4. The system as set forth in claim 1, wherein the information stored by the storage unit comprises a video file.

5. The system as set forth in claim 1, wherein the information stored by the storage unit comprises a graphics file.

6. The system as set forth in claim 1, wherein the information stored by the storage unit comprises a data file.

7. The system as set forth in claim 1, wherein the input/output controller receives the information from a content provider and stores the information in the storage unit.

8. The system as set forth in claim 1, further comprising the base station for notifying the selective transceiver of the available information.

9. The system as set forth in claim 8, wherein the base station is part of a paging network.

10. The system as set forth in claim 8, wherein the base station is part of a mobile radiotelephone network.

11. The system as set forth in claim 1, wherein the request signal specifies the desired action of forwarding the information and the input/output controller directs the information to a designated recipient of the information.

12. The system as set forth in claim 1, wherein the request signal specifies the desired action of saving the information and the input/output controller flags the information for saving in the storage unit.

13. The system as set forth in claim 1, wherein the request signal specifies the desired action of retrieving the available information and the input/output controller directs the available information to the selective transceiver.

14. The system as set forth in claim 13, further comprising a second base station and wherein, in response to the request signal, the input/output controller sends the available information to the second base station for delivery to the selective transceiver.

15. The system as set forth in claim 14, wherein the second base station is part of a paging network.

16. The system as set forth in claim 14, wherein the second base station is part of a mobile radiotelephone network.

17. The system as set forth in claim 13, wherein, in response to the request signal, the input/output controller forwards the available information to the base station for delivery to the selective transceiver.

18. The system as set forth in claim 17, wherein the second base station is part of a paging network.

19. The system as set forth in claim 17, wherein the second base station is part of a mobile radiotelephone network.

20. The system as set forth in claim 1, wherein the request signal specifies the desired action of sending the information to a designated recipient and the input/output controller directs the information to the designated recipient.

21. The system as set forth in claim 1, wherein the request signal specifies the desired action of erasing the information and the input/output controller flags the information in the storage unit for erasure.

22. The system as set forth in claim 1, wherein the request signal specifies the desired action of replying to the information and the input/output controller directs a reply to a designated recipient.

23. A system for notifying a user of a selective transceiver of available information, comprising:

an input/output controller for receiving a data signal from a storage facility wherein the data signal includes an information identifier signal for identifying the available; and

a terminal controller for generating a selective call signal which includes at least part of the information identifier signal and an address signal for identifying the selective transceiver and for supplying the selective call signal to a base station for transmission to the selective transceiver.

24. The system as set forth in claim 23, wherein the data signal received from the storage facility comprises an audio file.

25. The system as set forth in claim 23, wherein the data signal received from the storage facility comprises a text file.

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26. The system as set forth in claim 23, wherein the data signal received by the storage facility comprises a video file.

27. The system as set forth in claim 23, wherein the data signal received by the storage facility comprises a graphics file.

28. The system as set forth in claim 23, wherein the data signal received by the storage facility comprises a data file.

29. The system as set forth in claim 23, further comprising a storage unit and wherein the input/output controller receives a second data signal having a second information identifier signal and the address signal, the input/output controller stores the second data signal in the storage unit, the terminal controller generates a second selective call signal including a facility identifier signal which identifies the storage unit, and the terminal controller supplies the second selective call signal to the base station for transmission to the selective transceiver.

30. The system as set forth in claim 23, further comprising the base station for transmitting the selective call signal to the selective transceiver.

31. The system as set forth in claim 30, wherein the base station comprises part of a paging network.

32. The system as set forth in claim 30, wherein the base station comprises part of a mobile radiotelephone network.

33. The system as set forth in claim 23, wherein the terminal controller additionally includes in the selective call signal a facility identifier signal indicating the storage facility storing the information available to the user.

34. The system as set forth in claim 33, wherein the input/output controller receives a second data signal from a second storage facility with the second data signal including a second information identifier signal and the address signal and the terminal controller generates and supplies a second selective call signal to the base station for transmission to the selective transceiver, the second selective signal including the facility identifier signal for indicating the second storage facility.

35. A system for delivering information to a selective transceiver, comprising:

- an input/output controller;
- a storage unit for storing information available to the selective transceiver; and
- a terminal controller for generating an information identifier signal which is associated with the information stored in the storage unit, for determining an address signal for the selective transceiver, and for supplying the information identifier signal and the address signal to the input/output controller;
- the input/output controller supplying a selective call signal to a base station for transmission to the selective transceiver, the selective call signal including the information identifier signal and the address signal but does not include all of the information stored in the storage unit;
- wherein, in response to receiving a request signal from the selective transceiver indicating a desired action to be taken on the information, the input/output controller executes the desired action on the information.

36. The system as set forth in claim 35, wherein the data signal received from the storage facility comprises an audio file.

37. The system as set forth in claim 35, wherein the data signal received from the storage facility comprises a text file.

38. The system as set forth in claim 35, wherein the data signal received by the storage facility comprises a video file.

39. The system as set forth in claim 35, wherein the data signal received by the storage facility comprises a graphics file.

40. The system as set forth in claim 35, wherein the data signal received by the storage facility comprises a data file.

41. The system as set forth in claim 35, wherein the input/output controller receives an incoming call containing the information and stores the information in the storage unit.

42. The system as set forth in claim 35, wherein the request signal specifies the desired action of forwarding the information and the input/output controller directs the information to a designated recipient of the information.

43. The system as set forth in claim 35, wherein the request signal specifies the desired action of saving the information and the input/output controller flags the information for saving in the storage unit.

44. The system as set forth in claim 35, wherein the request signal specifies the desired action of retrieving the available information and the input/output controller directs the available information to the selective transceiver.

45. The system as set forth in claim 35, further comprising a second base station and wherein, in response to the request signal, the input/output controller sends the available information to the second base station for delivery to the selective transceiver.

46. The system as set forth in claim 45, wherein the second base station is part of a paging network.

47. The system as set forth in claim 45, wherein the second base station is part of a mobile radiotelephone network.

48. The system as set forth in claim 35, further comprising the base station and wherein, in response to the request signal, the input/output controller forwards the available information to the base station for delivery to the selective transceiver.

49. The system as set forth in claim 48, wherein the base station is part of a paging network.

50. The system as set forth in claim 48, wherein the base station is part of a mobile radiotelephone network.

51. The system as set forth in claim 35, wherein the request signal specifies the desired action of sending the information to a designated recipient and the input/output controller directs the information to the designated recipient.

52. The system as set forth in claim 35, wherein the request signal specifies the desired action of erasing the information and the input/output controller flags the information in the storage unit for erasure.

53. The system as set forth in claim 35, wherein the request signal specifies the desired action of replying to the information and the input/output controller directs a reply to a designated recipient.

54. A method for delivering information to an intended recipient, comprising the steps of:

- storing the information available for the intended recipient;
- directing a data signal to a base station wherein the data signal includes an information identifier signal for identifying the available information and an address signal for identifying a selective transceiver of the intended recipient but does not include all of the available information;
- notifying the intended recipient of the available information;
- receiving a request from the selective transceiver to perform an action on the available information; and
- performing the action on the available information.

55. The method as set forth in claim 54, wherein the step of storing the information comprises a step of receiving the information from a content provider.

56. The method as set forth in claim 54, wherein the step of directing the data signal to the base station comprises a step of transmitting the data signal over the Internet.

57. The method as set forth in claim 54, wherein the step of directing the data signal to the base station comprises a step of transmitting the data signal over the public switched telephone network.

58. The method as set forth in claim 54, wherein the step of performing the desired action comprises a step of forwarding the information to a designated recipient.

59. The method as set forth in claim 54, wherein the step of performing the desired action comprises a step of flagging information for storage.

60. The method as set forth in claim 54, wherein the step of performing the desired action comprises a step of sending the information to the selective transceiver.

61. The method as set forth in claim 54, wherein the step of performing the desired action comprises a step of sending a second set of information to a designated recipient.

62. The method as set forth in claim 54, wherein the step of performing the desired action comprises a step of erasing the information.

63. The method as set forth in claim 54, wherein the step of performing the desired action comprises a step of sending a reply to the information to a designated recipient.

64. A method for notifying a user of a selective transceiver of available information, comprising the steps of:

receiving a data signal from a storage facility wherein the data signal includes an information identifier signal for identifying information available to the user;

generating a selective call signal including at least part of the information identifier signal and an address signal for the selective transceiver; and

supplying the selective call signal to a base station for transmission to the selective transceiver.

65. The method as set forth in claim 64, wherein the step of receiving the data signal comprises a step of receiving the data signal over the public switched telephone network.

66. The method as set forth in claim 64, wherein the step of receiving the data signal comprises a step of receiving the data signal over the Internet.

67. The method as set forth in claim 64, further comprising a step of transmitting the selective call signal to the selective transceiver.

68. The method as set forth in claim 67, wherein the step of transmitting occurs over a paging network.

69. The method as set forth in claim 67, wherein the step of transmitting occurs over a mobile radiotelephone network.

70. The method as set forth in claim 64, further comprising steps of receiving a request from the selective transceiver to perform a desired action on the available information and performing the desired action on the available information.

71. A method for delivering information to a selective transceiver, comprising the steps of:

storing information available to the selective transceiver;
generating an information identifier signal which is associated with the available information;

determining an address signal for the selective transceiver;
forming a selective call signal from the information identifier signal and address signal;

supplying the selective call signal to a base station for transmission to the selective transceiver;

receiving a request from the selective transceiver indicating a desired action to be taken on the information; and

performing the desired action on the information.

72. The method as set forth in claim 71, wherein the step of storing the information comprises a step of receiving an incoming call containing the information.

73. The method as set forth in claim 72, wherein the step of determining the address signal comprises a step of detecting a called number associated with the incoming call.

74. The method as set forth in claim 71, wherein the step of performing the desired action comprises a step of forwarding the information to a recipient designated in the request.

75. The method as set forth in claim 71, wherein the step of performing the desired action comprises a step of saving the information.

76. The method as set forth in claim 71, wherein the step of performing the desired action comprises a step of sending information to the selective transceiver.

77. The method as set forth in claim 76, wherein the step of sending the information occurs over a paging network.

78. The method as set forth in claim 76, wherein the step of sending the information occurs over a mobile radiotelephone network.

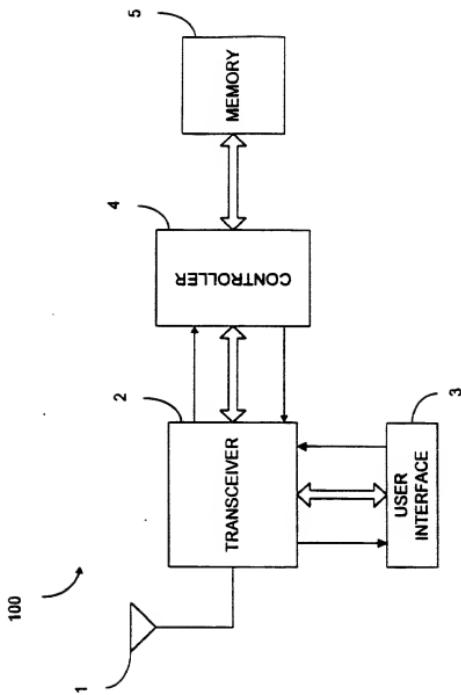
79. The method as set forth in claim 71, wherein the step of performing the desired action comprises a step of sending a second set of information to a designated recipient.

80. The method as set forth in claim 71, wherein the step of performing the desired action comprises a step of erasing the information.

81. The method as set forth in claim 71, wherein the step of performing the desired action comprises a step of sending a reply to the information to a designated recipient.

ABSTRACT

A system and method for selecting paging provides a page to a paging transceiver but does not automatically provide an associated message. The paging transceiver receives the page and alerts the user that a message is waiting and preferably provides a short description of the message. The user can then download or otherwise act on the message at a time and at a place convenient to the user. The user can therefore place the paging transceiver in a location where it can easily receive and reply to the message. The paging system conserves air time and the paging transceiver conserves memory by not automatically receiving the associated messages. The paging transceiver can receive transmissions during off-peak hours and has a timer which can be programmed so that messages are delivered at a desired time. The content of the messages may be stored in a plurality of different systems and one or more of these systems may page the paging transceiver to inform it of the messages. The paging transceiver may retrieve the messages from the system paging, even though it may not store the message, or directly from the system storing the message. The messages stored by the systems and delivered to the paging transceiver may be of different types, such as voice, text, audio, or even video. In addition to messages, the paging system can store other information for the user, such as songs or video clips that the user can sample or updates on weather or stock rates.



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FIG.

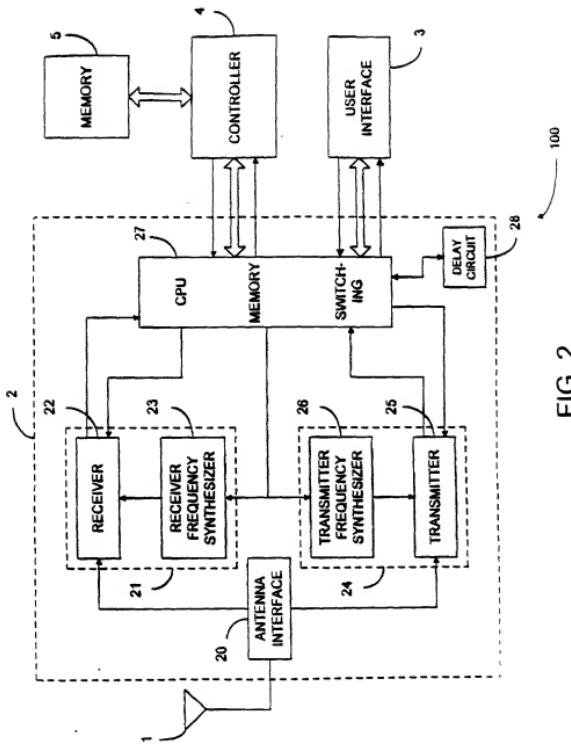


FIG. 2

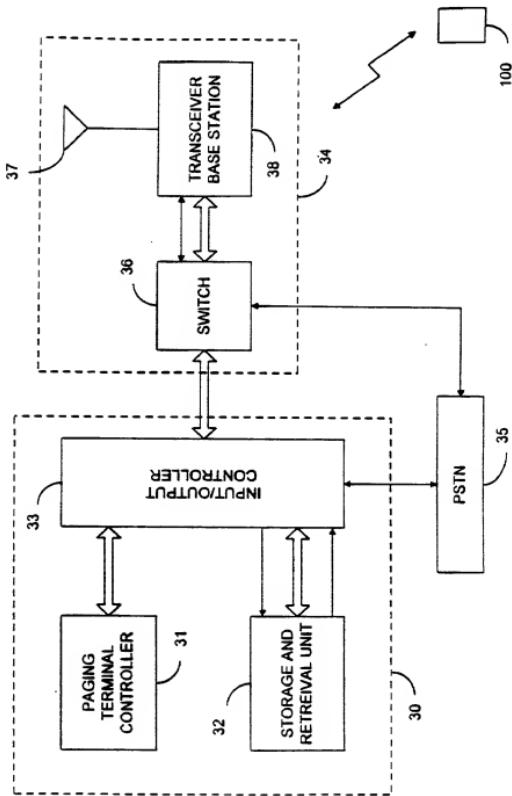


FIG. 3

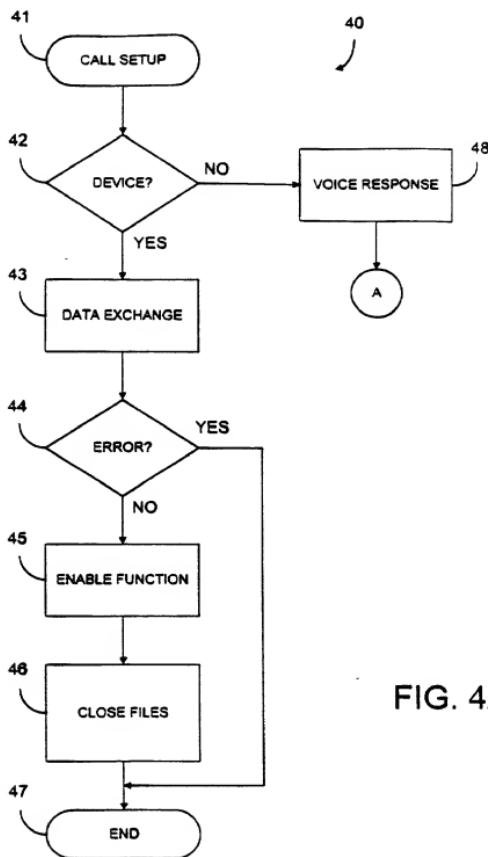


FIG. 4A

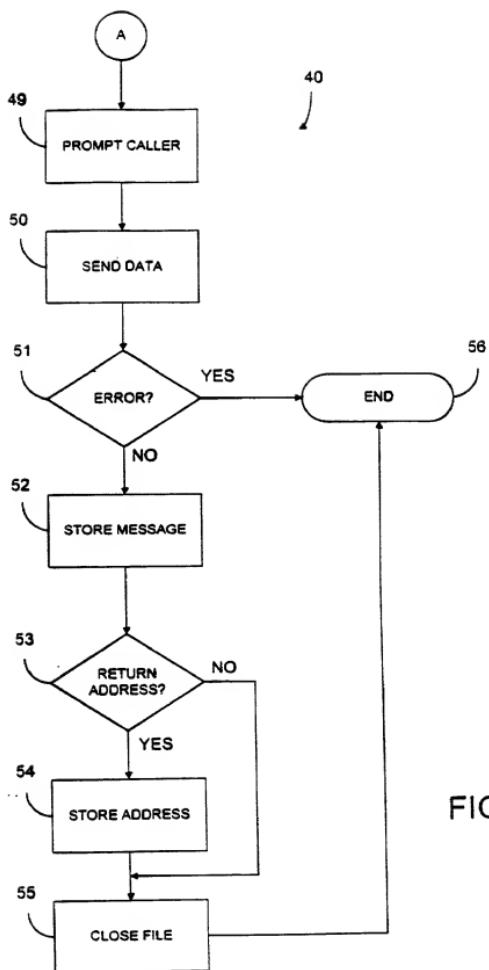


FIG. 4B

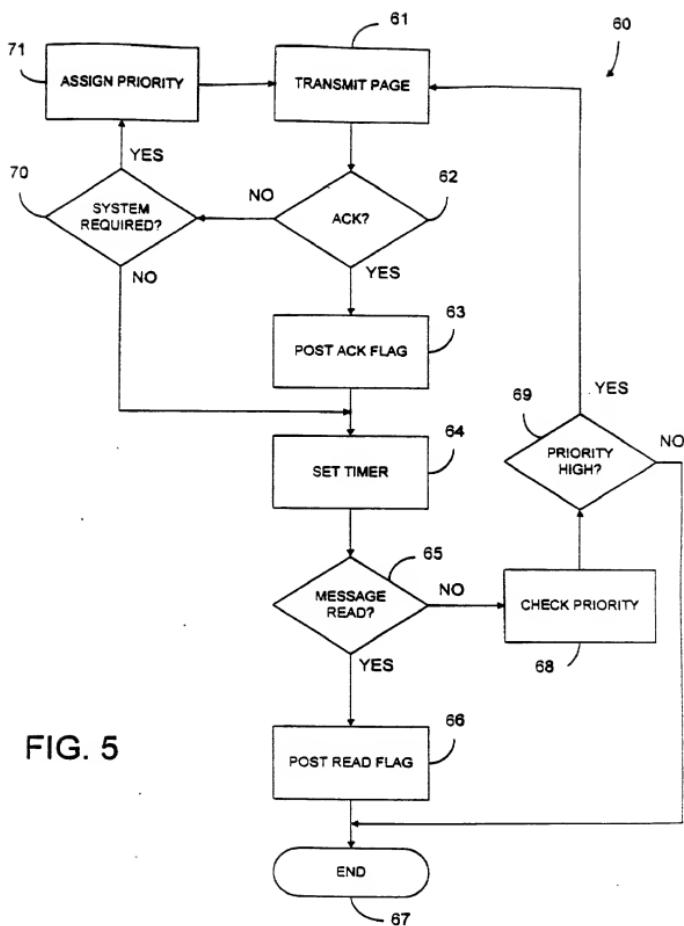


FIG. 5

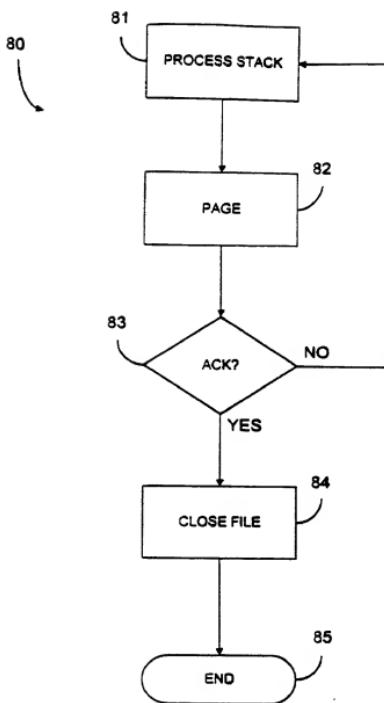


FIG. 6

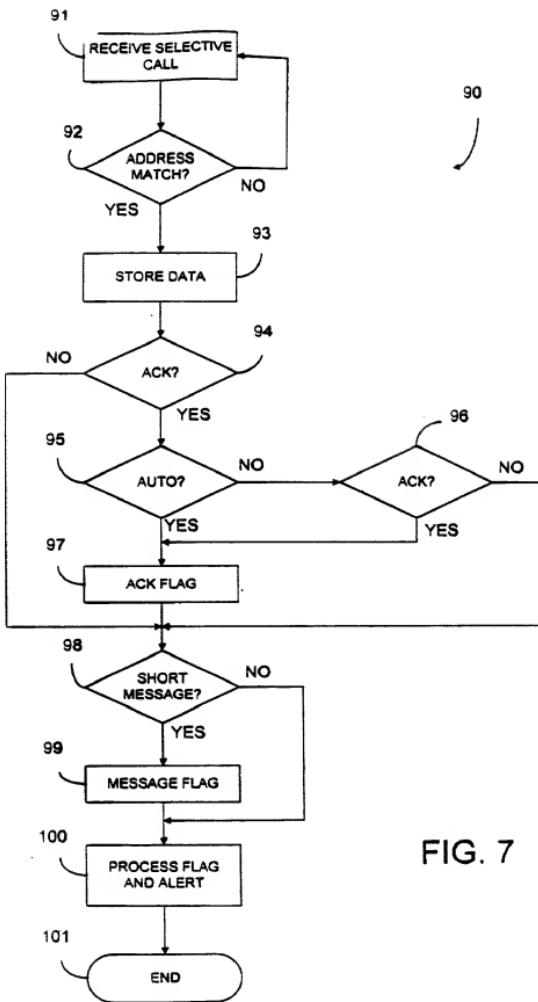


FIG. 7

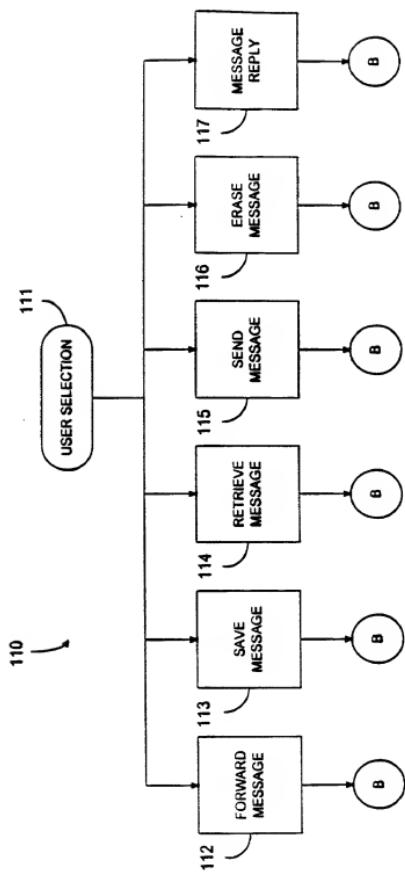


FIG. 8

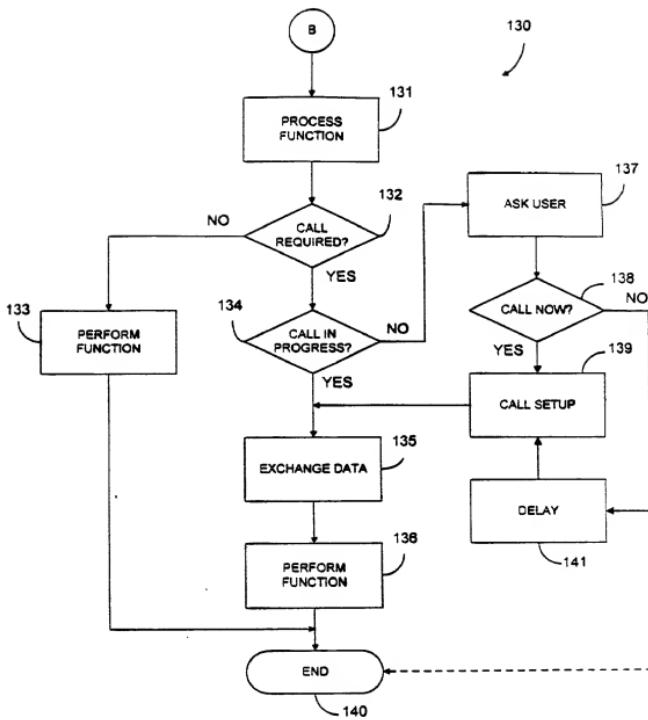


FIG. 9

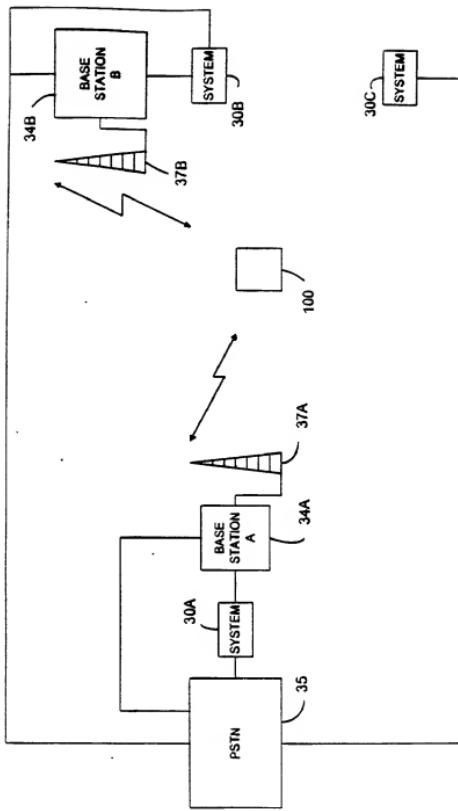


FIG. 10

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SYSTEM ID	TRANSCOMM(S) ID	MESSAGE ID	MESSAGE TYPE	MESSAGE LENGTH	MESSAGE PRIORITY	ADDITIONAL INFORMATION
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FIG. 11

Declaration, Power Of Attorney and Petition

Page 1 of 2

WE (I) the undersigned inventor(s), hereby declare(s) that:

My residence, post office address and citizenship are as stated below next to my name.

We (I) believe that we are (I am) the original, first, and joint (sole) inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention enclosed.

SYSTEMS AND METHODS FOR SELECTIVE PAGING

the specification of which

is attached hereto.

was filed on September 19, 1997 as
Application Serial No. 08/933,344
and amended on _____.

was filed as PCT international application
Number _____
on _____
and was amended under PCT Article 19
on _____ (if applicable).

We (I) hereby state that we (I) have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

We (I) acknowledge the duty to disclose information known to be material to the patentability of this application as defined in Section 1.56 of Title 37 Code of Federal Regulations.

We (I) hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed. Prior Foreign Application(s)

Application No.	Country	Day/Month/Year	Priority Claimed
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No

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RECEIVED TIMEMAR 20. 11:08AM

PRINT TIMEMAR 20. 11:13AM

We (I) hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

(Application Number)	(Filing Date)
(Application Number)	(Filing Date)

We (I) hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

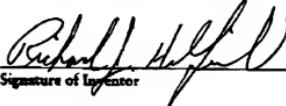
Application Serial No.	Filing Date	Status (pending, patented, abandoned)

And we (I) hereby appoint: Norman F. Obion, Registration Number 24,618; Marvin J. Spivak, Registration Number 24,913; C. Irvin McClelland, Registration Number 21,124; Gregory J. Maier, Registration Number 25,599; Arthur L. Neustadt, Registration Number 24,854; Richard D. Kelly, Registration Number 27,757; James D. Hamilton, Registration Number 28,421; Eckhard H. Kuesters, Registration Number 28,870; Robert T. Fous, Registration Number 29,099; Charles L. Gholz, Registration Number 26,935; Vincent J. Sunderdick, Registration Number 29,006; William E. Beaumont, Registration Number 30,976; Steven B. Kalber, Registration Number 30,073; Robert F. Gause, Registration Number 27,295; Jean-Paul Lavallee, Registration Number 31,451; Stephen G. Baxter, Registration Number 32,884; Martin M. Zolick, Registration Number 35,745; Robert W. Hall, Registration Number 33,893; Richard L. Treanor, Registration Number 36,379; Steven P. Wehrhouch, Registration Number 32,829; John T. Goolkasian, Registration Number 26,142; Marc R. Labgold, Registration Number 34,651; William J. Healey, Registration Number 36,160; Richard L. Chinn, Registration Number 34,305; Steven E. Lipman, Registration Number 30,011; Carl E. Schlier, Registration Number 34,426; James J. Kulbaski, Registration Number 34,648; Catherine B. Richardson, Registration Number 39,007; Richard A. Neifeld, Registration Number 35,299; J. Derek Mason, Registration Number 35,270; and Surinder Sodhi, 34,422; our (my) attorneys, with full powers of substitution and revocation, to prosecute this application and to transact all business in the Patent Office connected therewith; and we (I) hereby request that all correspondence regarding this application be sent to the firm of OBLON, SPIVAK, McCLELLAND, MAIER & NEUSTADT, P.C., whose Post Office Address is Fourth Floor, 1755 Jefferson Davis Highway, Arlington, Virginia 22202.

We (I) declare that all statements made herein of our (my) own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 101 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

RICHARD J. HELFERTICH

NAME OF FIRST SOLE INVENTOR


Signature of Inventor

March 20, 1998

Date

Residence:

Chapel Hill, North Carolina

Citizen of: U.S.

Post Office Address: 8408 Sterling Bridge Road
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

Docket No.: 19529-037

Richard J. Helferich

Serial No.: To Be Assigned

Filing Date: Herewith

For: **System and Method for Delivering Information to a
Transmitting and Receiving Device (As Amended)**

The Assistant Commissioner for Patents
Washington, D.C. 20231

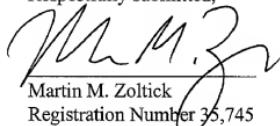
**Notification That the Power of Attorney and Correspondence Has Changed
During the Prosecution of the Prior Application (37 C.F.R. 1.63(d)(4))**

Dear Sir:

The above identified non-provisional patent application is a divisional of U.S. Patent Application No.: 08/933,344 (hereafter "the prior application").

Pursuant to 37 C.F.R. § 1.63(d)(4), Applicants hereby identify that the Power of Attorney and Correspondence address was changed during the prosecution of the prior application. Attached hereto is a copy of (1) a Revocation and New Power of Attorney which was filed in the prior application on July 13, 1999 and (2) a Notice of Change of Correspondence Address which was filed in the prior application on March 7, 2000.

Respectfully submitted,



Martin M. Zoltick
Registration Number 35,745
Brian S. Rosenbloom
Registration Number 41,276
Mintz, Levin, Cohn, Ferris,
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Telephone 703/464-4800
Attorneys for Applicant

Date: October 13, 2000

PATENT APPLICATION
Attorney Docket No.: 19504-012

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS : Richard J. Helferich
SERIAL NUMBER : 08/933,344
FILING DATE : September 19, 1997
FOR : SYSTEMS AND METHODS FOR
SELECTIVE PAGING

EXAMINER : T. Nguyen
ART UNIT : 2749

Assistant Commissioner for Patents
Washington, D.C. 20231

COPY

NOTICE OF CHANGE OF CORRESPONDENCE ADDRESS

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C.20231

Sir:

It is hereby requested that all correspondence regarding this application be sent to Martin M. Zoltick at the firm of MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C., whose Post Office address is: 11911 Freedom Drive, Suite 400, Reston, Virginia 20190.

Date: March of 2000

Respectfully submitted,



Martin M. Zoltick, Reg. No. 35,745
Brian S. Rosenbloom, Reg. No. 41,276
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703-464-4803

Attorneys for Applicants

Express Mail No.: EH83- 7637US
Date of Deposit: July 13, 1999

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PATENT APPLICATION
Attorney Docket No. 19504-012
(CBM-2 CON)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS : Richard J. Helferich

SERIAL NUMBER : 08/933,344

EXAMINER : T. Nguyen

FILING DATE : September 19, 1997

ART UNIT : 2746

FOR : SYSTEMS AND METHODS FOR SELECTIVE PAGING

July 6th, 1999
Washington, D.C.

Assistant Commissioner for Patents
Washington, DC 20231

REVOCATION AND NEW POWER OF ATTORNEY

I, the undersigned inventor, hereby revoke any and all former powers of attorney and appoint:

David B. Bernstein, Registration No. 32,112
David F. Crosby, Registration No. 36,400
Brett N. Dorn, Registration No. 35,860
Ivor R. Elrifi, Registration No. 39,529
John A. Harre, Registration No. 37,345
William Marino, Registration No. 44,219
Leslie Meyer-Leon, Registration No. 37,381
A. Jason Mirabito, Registration No. 28,161
Michel Morency, Limited Recognition
John T. Prince, Registration No. 43,091
C. Eric Schulman, Registration No. 43,390
Thomas M. Sullivan, Registration No. 39,392
Howard Susser, Registration No. 33,556

all of MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO PC, One Financial Center, Boston, Massachusetts 02111, and

Martin M. Zoltick, Registration No. 35,745

of MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO PC, 701 Pennsylvania Avenue, N.W., Washington, D.C. 20004, as my attorneys with full power of substitution and revocation to take any and all action necessary with regard to the above-identified application.

APPLICATION NO.

0 53,344

APPLICANTS:

Richard J. Helferich

SEND CORRESPONDENCE TO:

Martin M. Zoltick
Mintz Levin
701 Pennsylvania Avenue, N.W.
Washington, D.C. 20004

DIRECT TELEPHONE CALLS TO:

Martin M. Zoltick
(202) 434-7419

I, the undersigned, hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Please charge any fee or any fee deficiency occasioned by this document to Deposit Account No. 50-0311 (00960-502; CBM-2 CON).

Richard J. Helferich
Sole Inventor

Richard J. Helferich
Signature of Inventor

July 6th, 1999
Date

DCDOCS: 152202.1 (39%011.doc)